ORDER NO. KM40211987C1

F1

# Service Manual

## Telephone Equipment

## KX-TS3282W

## Integrated Telephone System

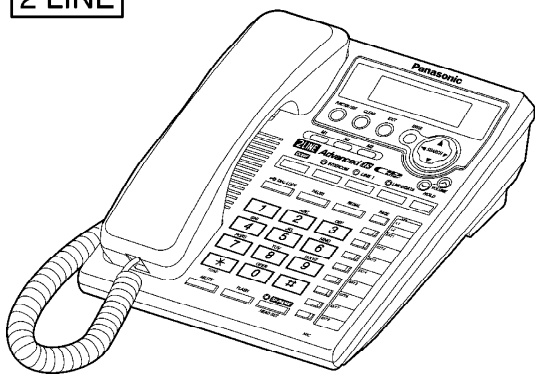
## White Version

## (for U.S.A.)

Caller ID Compatible

INTERCOM

2 LINE



## SPECIFICATIONS

## ■ SPECIFICATION

| | |
|---|---|
| Power Source: | AC adaptor (120 V AC, 60 Hz) |
| | Three "AA" sixe Manganese (R6, UM-3) batteries |
| Power Consumption: | Standby: Approx. 1 W |
| | Maximum: Approx. 1.5 W |
| Memory Capacity: | 50 directory memory, M1~M3 for each station |
| Dial Speed: | Tone (DTMF)/Pulse (10 pps) |
| Redial: | The unit redials the last 10 dialed numbers |
| Pause: | Unit, 6.5 cm (2.5") PM magnetic type |
| Speaker: | Receiver unit, 32Ω |
| | Handset; 3 cm ($1^{3}/_{16}$") PM |
| Microphone: | Electric condenser microphone |
| Input Jacks: | Telephone line (L1/L2, L2, DC IN) |
| Operating Enviroment: | 5˚C - 40 ˚C (41 ˚F - 104 ˚F) |
| Dimensions: | $7^{5}/_{16}$" × $9^{1}/_{16}$" × $3^{25}/_{32}$" |
| | [186 (W) × 231 (D) × 96 (H) mm] |
| Weight: | 1.96 lbs. (890 g) [with the Handset] |

Design and specifications are subject to change without notice.

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**⚠ WARNING**

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

When you note the serial number, write down all 11 digits. The serial number may be found on the bottom of the unit.

## FOR SERVICE TECHNICIANS

ICs and LSIs are vulnerable to static electricity.
**When repairing, the following precautions will help prevent recurring malfunctions.**
1. Cover plastic parts boxes with aluminum foil.
2. Ground the soldering irons.
3. Use a conductive mat on worktable.
4. Do not grasp IC or LSI pins with bare fingers.

## CAUTION

Danger of explosion if battery is incorrectly replaced.

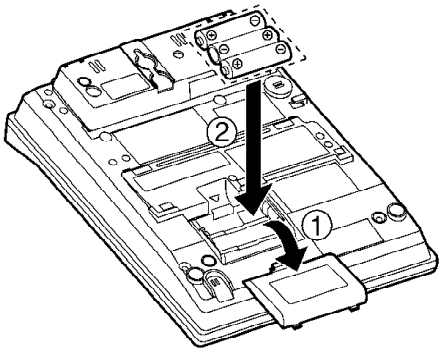
Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's Instructions.

Panasonic

# 1. Battery

## 1.1. Installing the Batteries

**Install the three included batteries in the battery compartment. They work as emergency power during a power failure. The unit will work as a standard telephone, so that you can make or answer external calls with the handset. (You cannot use the intercom.)**




1 Press down in the direction of the arrow and remove the cover.

2 Install the batteries in the proper order as shown, matching the correct polarity.

3 Close the battery cover.

- You can also install three "AA" size Alkaline (LR6) batteries.
- The battery operating time may depend on usage conditions and ambient temperature.
- The battery operating time during a power failure is about three weeks for the three included "AA" size Manganese (R6, UM-3) batteries. The battery operating time will be longer for three "AA" size Alkaline (LR6) batteries.
- During a power failure the batteries will retain the clock memory and the redial memory. If you do not install the batteries in a power failure, those memory will be erased.

**Battery replacement**

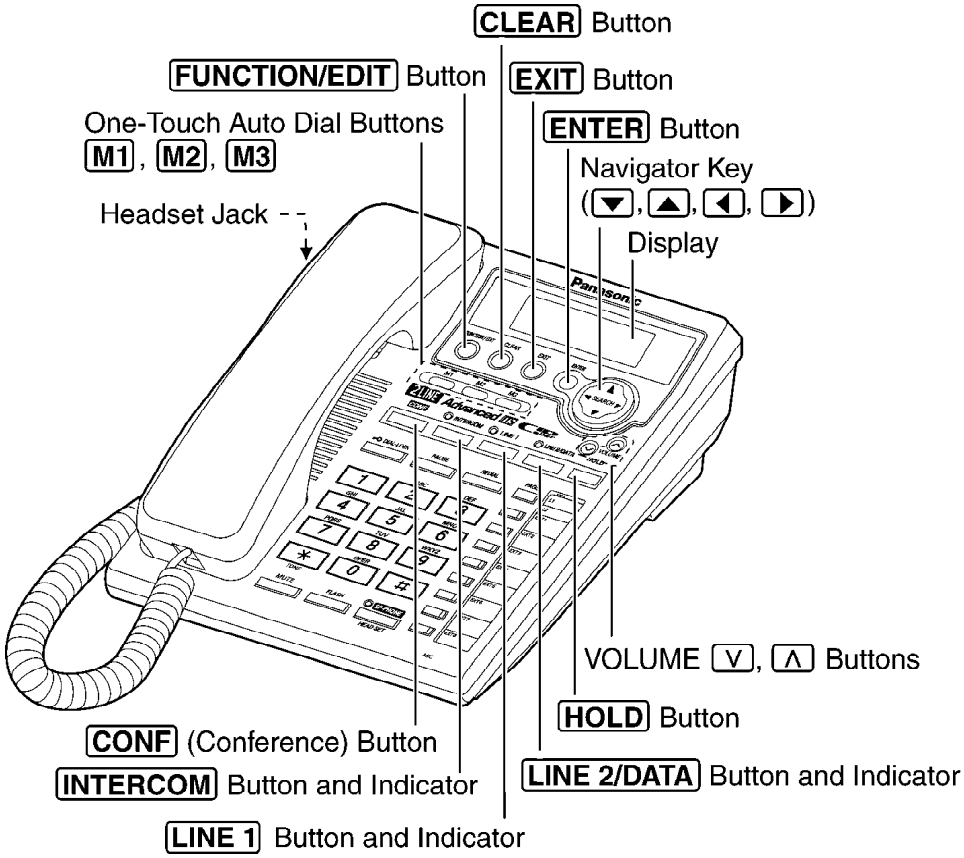
If "▭" flashes, the battery power is low. Replace the batteries with new ones. Disconnect the telephone line cord(s) before opening the battery cover.

- You do not need to disconnect the AC adaptor, otherwise the clock memory and the redial memory will be erased. If "◴" flashes on the display, adjust the clock.

**Note: for Service**

**Replace all three batteries if "▭" flashes.**

# 2. LOCATION OF CONTROLS

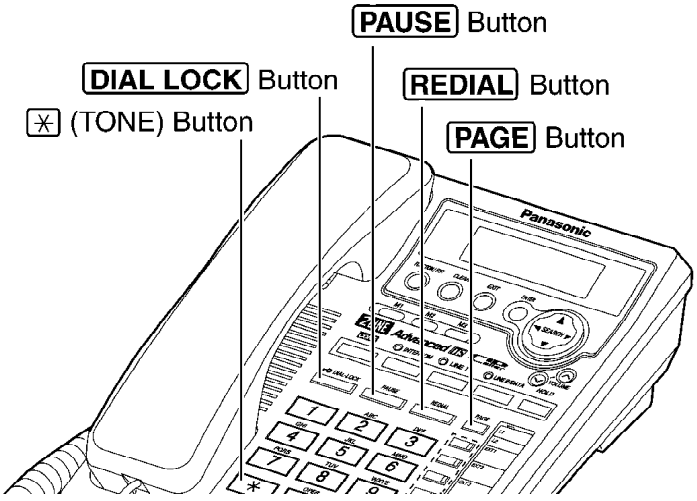


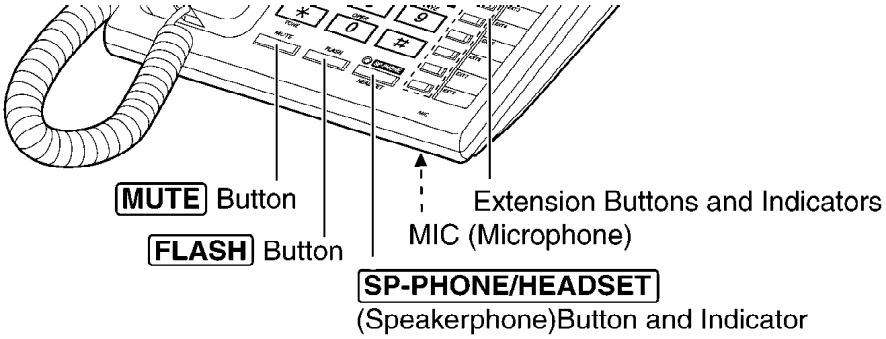

**How to use the Navigator key**

This key has four active areas that are indicated by arrows.

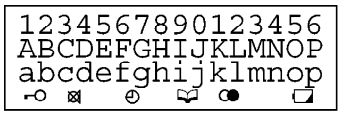
- Pressing the up and down arrows allows you to enter the Caller List and scroll through the Caller List, the directory list and the function menu.
- Pressing the right and left arrows allows you to enter the Directory list and move the cursor when entering items.
- The right arrow is used to select your menu choices.

Throughout these Service Manual, the navigator key is indicated by the arrows ▲, ▼, ◀ or ▶.

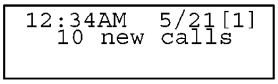




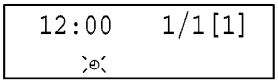

# 3. Display



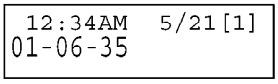

(This display shows all of the possible configurations.)



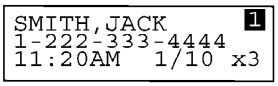

When the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off, the display shows the current time and date, the extension number, and the number of new calls if you subscribed to a Caller ID service.




If "◴" flashes on the display, the clock needs adjusting.




During a conversation, the display shows the length of the call (ex. 1 hour, 6 minutes and 35 seconds).



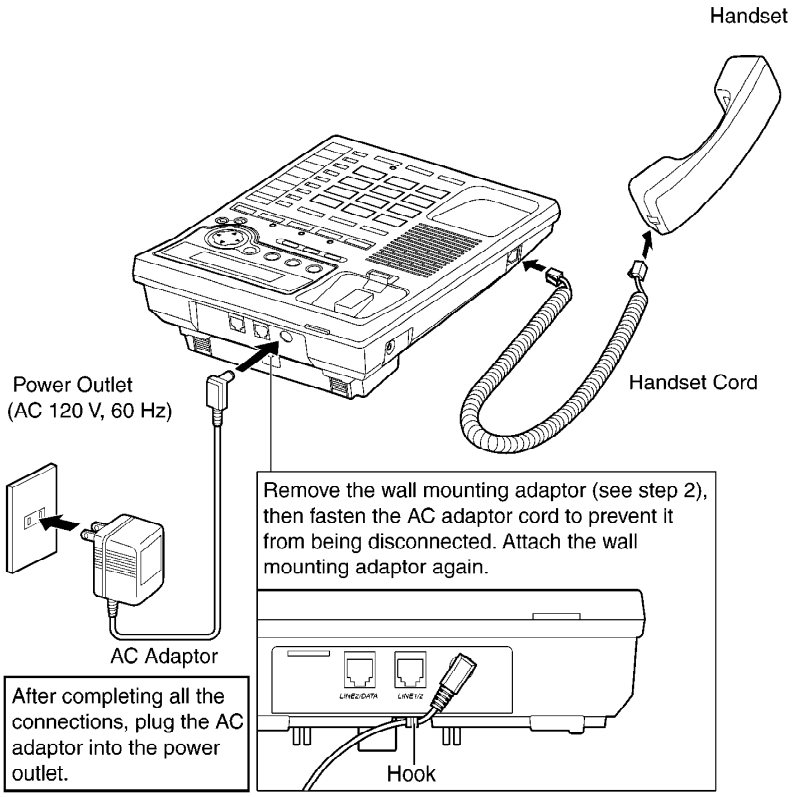

This is a display from the Caller List. The display shows:
— the caller's name,
— the called line,
— the caller's number,
— the time and date of the last call (ex. Jan. 10, 11:20 AM), and
— the number of times called (ex. 3 times).

⊶ : The dial lock mode is set.
⊠ : MUTE was pressed during a conversation.
🕮 : Displays when storing or viewing the directory items.
◉ : Displays while viewing the redial list.
▱ : The battery power is low or the batteries have not been installed.
P : PAUSE was pressed while dialing or storing phone numbers.
F : FLASH was pressed while storing phone numbers.

# 4. SETTINGS

## 4.1. Connections

### 4.1.1. Connecting the Handset and AC Adaptor


Handset
Power Outlet
(AC 120 V, 60 Hz)
Handset Cord
Remove the wall mounting adaptor (see step 2), then fasten the AC adaptor cord to prevent it from being disconnected. Attach the wall mounting adaptor again.
AC Adaptor
After completing all the connections, plug the AC adaptor into the power outlet.
Hook

- USE ONLY WITH Panasonic AC ADAPTOR KX-TCA1-G.
- Use only a Panasonic Handset for the KX-TS3282W.
- The AC adaptor must remain connected at all times. (It is normal for the adaptor to feel warm during use.)
- After you connect the AC adaptor;
  — the display shows "`Set clock`" for 60 seconds, and
  — all of the extension indicators flash until you assign the extension number of your unit.

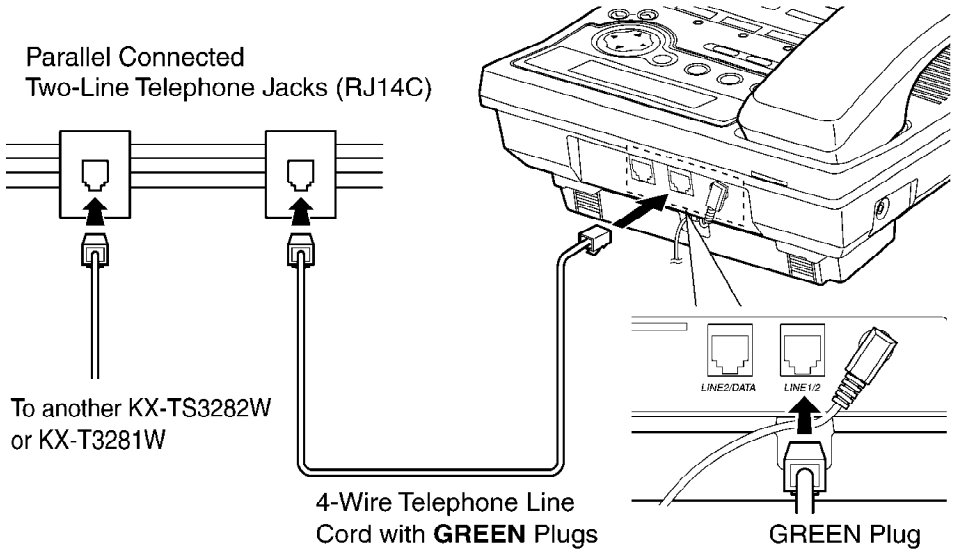
During a power failure, the batteries serve as the power source. The unit will work as a standard telephone. You can make or answer an external call with the handset. (You cannot use the intercom.)

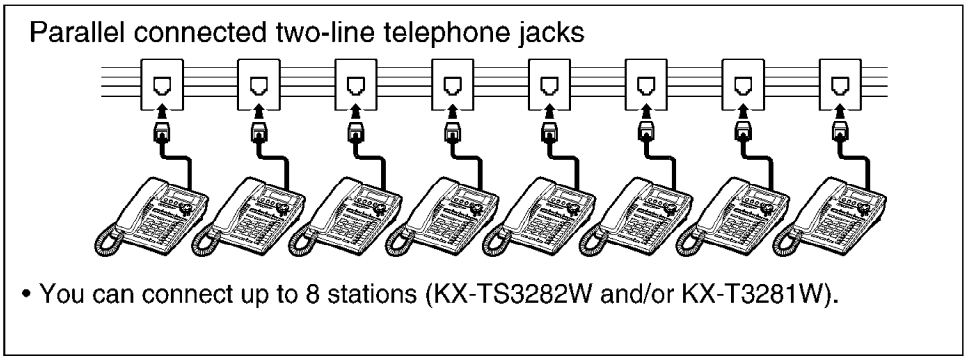
## 4.1.2. Connecting Telephone Line Cords

**A maximum of eight KX-TS3282Ws can be connected in parallel. You can also connect KX-T3281W.**

**To use the intercom, you must connect the telephone line cord to the LINE1/2 telephone jack of the unit.**

## To connect the units to individual two-line telephone jacks



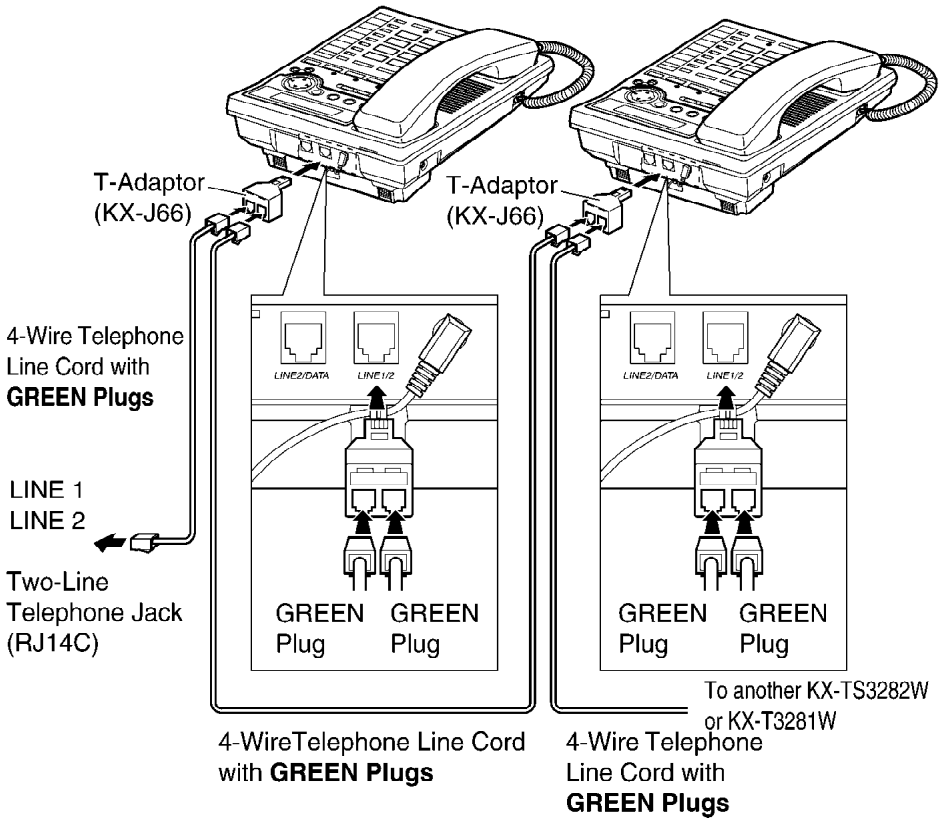




**- If another model telephone is connected to the KX-TS3282W except for KX-TS3281W, the line indicators of this unit will not function for that telephone.**

**- If you re-connect the telephone line cord(s), confirm that all of the extension indicators light with the AC adaptor connected, then connect the telephone line cord(s). If all of the extension indicators do not flash, the extension number has been assigned to this unit and the number might be used for another unit on the same line. Erase the previously assigned number, then connect the telephone line cord(s). Re-assign the number to the unit.**

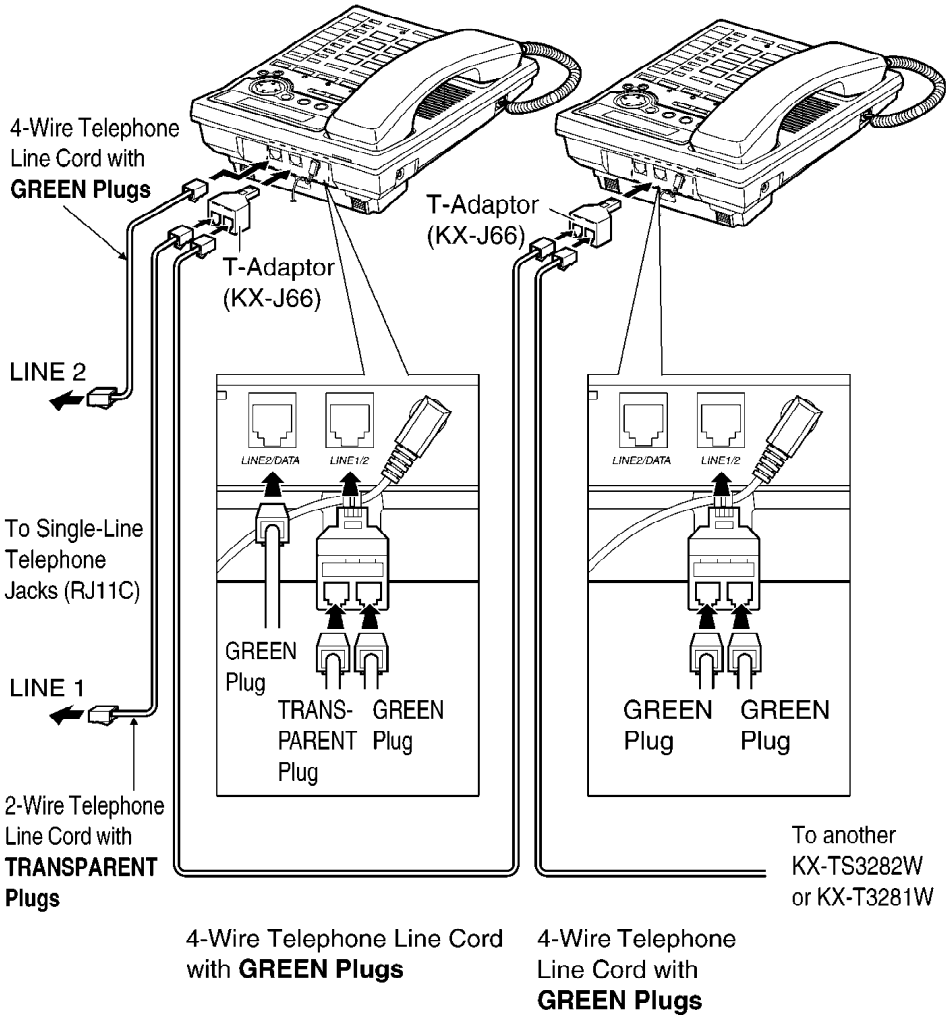
## To connect the units to a two-line telephone jack

If you provide only one two-line telephone jack for the units, continue to wire them using optional Panasonic T-adaptors KX-J66.



### To connect the units to two-line telephone jacks

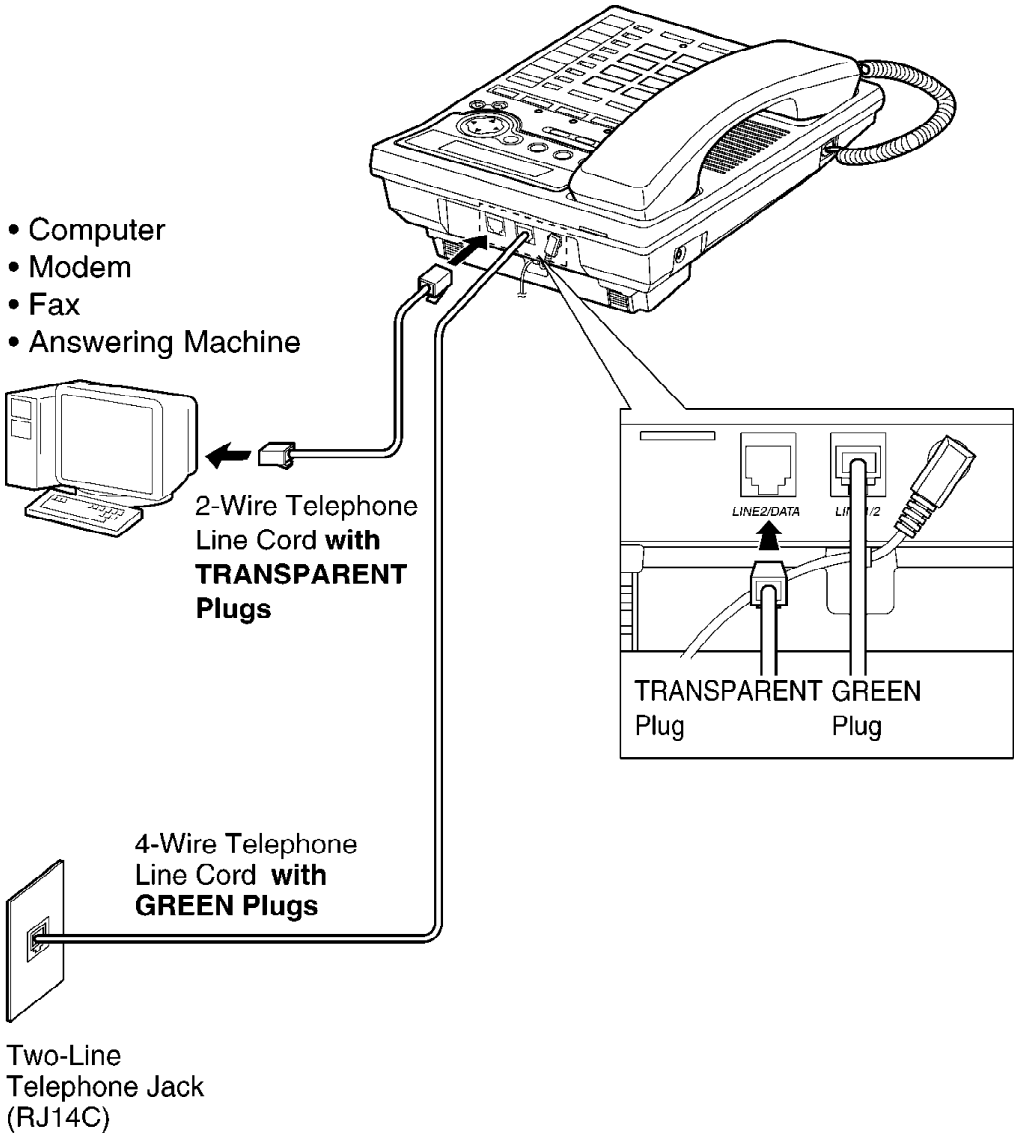
If you provide only two single-line telephone jacks for the units, continue to wire them using optional Panasonic T-adaptors KX-J66.




**- If you do not connect other extensions, you do not need to use a T-adaptor.**
**Connect a 2-wire telephone line cord to the LINE1/2 telephone jack of the unit directly.**

### 4.1.3. Connecting a Communication Device

**After connecting the telephone line cord to a two-line telephone jack, you can connect a communication device (computer, modem, fax, answering machine, etc.) through this unit using the LINE2/DATA jack.**

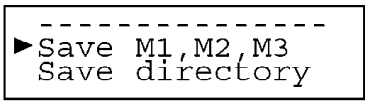



**- If the communication device is in use, use LINE 1 to make or answer other calls.**
**Otherwise the communication device may not operate properly.**

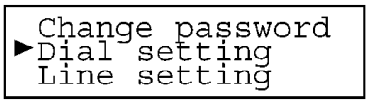
## 4.2. Dialing Mode

**If you have touch tone service, set to Tone. If rotary or pulse service is used, set to Pulse. Your phone comes from the factory set to Tone.**
**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/ HEADSET indicator light is off.**

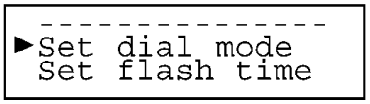
1 Press **FUNCTION/EDIT**.




2 Scroll to "Dial setting" by pressing ▼ or ▲.




3 Press ►.




4 Press ► at "Set dial mode".
- The current setting is displayed.

5 Select "Pulse" or "Tone" by pressing ▼ or ▲.

6 press **ENTER** (Save key).
- A beep sounds.
- To exit the programming mode, press **EXIT**.

- You can exit the programming mode any time by pressing **EXIT**.

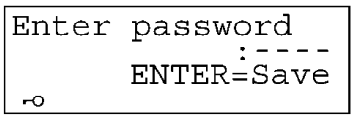
## 4.3. Dial Lock

Except for the numbers stored in the one-touch auto dial buttons, you can prevent others from making a call to any number. Only incoming calls are accepted until the dial lock is canceled.

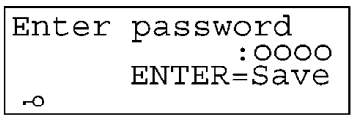
> Before using this feature, we recommend storing emergency numbers in the memory of one-touch auto dial buttons. Even if the dialing buttons are locked, the numbers stored in these buttons can be dialed.

### To set the dial lock

1 Press **DIAL LOCK**.
- "🔒" flashes on the display.




2 Enter the password.




3 Press **ENTER** (Save key).
- A beep sounds and '🔒' stops flashing and remains on the display.
- If 3 beeps are heard, you entered a wrong password. Enter the correct one.

- You can exit the programming mode any time by pressing **EXIT**.

> "🔒" is displayed when the mode is on.
> If the dial buttons are pressed after lifting the handset or pressing **SP-PHONE/HEADSET** or a line button "DIAL LOCKED" will be displayed for a few seconds.

- While the dialing buttons are locked, you cannot store phone numbers in the memory of one-touch auto dial buttons.

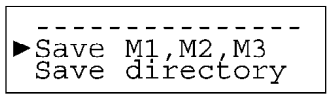
### To canel the dial lock

Follow steps 1 to 3 above.

- "🔒" will disappear on the display.

## 4.4. How to Release the Establishment of Dial Lock

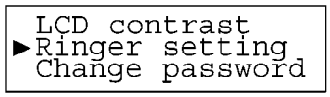
1 Press FUNCTION/EDIT.



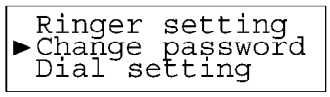

2 Press ▼.

3 Press ▼.

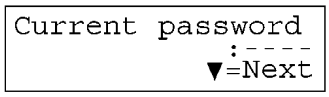
4 Press ▼.



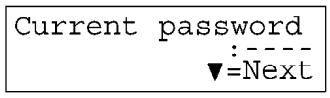

5 Press ▼.




6 Press ►.




7 Enter "726276642" (Panasonic) for initialzing of password.

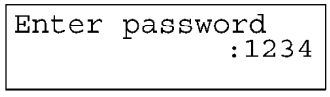



8 Press ▼.

9 Enter a new password 4 digits code by dial key pad (Ex."1234"). If you want to set the password for "DIAL LOCK" to "1111" (factory set), you should enter "1111".

10 Press ENTER.

After this procedure, the password for "DIAL LOCK" will be returned to "1234".




11 Press EXIT.

12 To cancel the Dial Lock, follow "To Cancel the Dial Lock" in **4.3. Dial Lock**.

## 4.5. Call Restriction

You can prevent the unit from dialing phone numbers beginning with specified digit(s) (1 digit or 2 digits). Except for the numbers stored in the memory of one-touch auto dial buttons, phone numbers with the restricted leading digits cannot be dialed out.

> Before using this feature, we recommend storing emergency numbers in the memory of one-touch auto dial buttons. Even if the phone numbers are restricted, the numbers stored in these buttons can be dialed.

## To set the call restriction

**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off.**

1 Press **FUNCTION/EDIT**.

```
----------------
▶Save M1,M2,M3
 Save directory
```

2 Scroll to "Dial setting" by pressing ▼ or ▲.

```
 Change password
▶Dial setting
 Line setting
```

3 Press ▶.

```
----------------
▶Set dial mode
 Set flash time
```

4 Scroll to "Call restrict" by pressing ▼ or ▲.

```
 Set flash time
▶Call restrict
----------------
```

5 Press ▶.

```
Restrict no.
          :--
    ENTER=Save
```

**If you changed the password from "1111" (factory preset) to another one, "Enter password" is displayed.**
Enter the password, and press ▼ (Next key).

```
Enter password
          :----
        ▼=Next
```

- If 3 beeps are heard, you entered a wrong password. Enter the correct one.

```
Enter password
          :0000
        ▼=Next
```

6 Enter the first number(s) (1 digit or 2 digits) you want to restrict (**0** to **9**).

- If you enter a wrong number, press **CLEAR** and enter the correct one.

Ex. "9" is entered.

```
Restrict no.
          :-9
    ENTER=Save
```

7 Press **ENTER** (Save key).

- A beep sounds.
- To exit the programming mode, press **EXIT**.

- You can exit the programming mode any time by pressing **EXIT**.
- While you restrict phone numbers beginning with specified digit(s), you cannot store phone numbers in the memory of one-touch auto dial buttons.

When dialing a phone number with the restricted leading digit(s), "CALL RESTRICTED" is displayed.

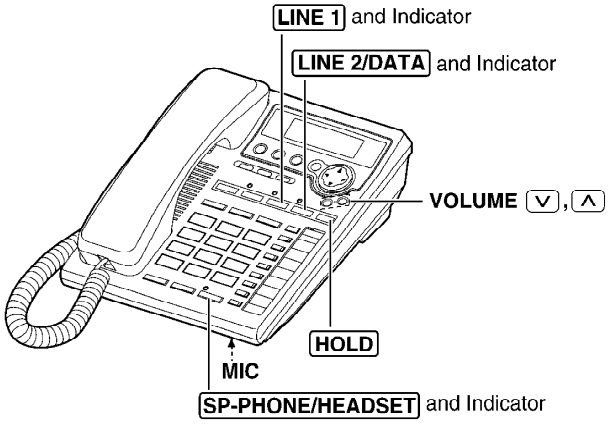
### To cancel the call restriction

Repeat steps 1 to 5. Then press **CLEAR** to clear the restricted digits, and press **ENTER** (Save key).

# 5. OPERATIONS

## 5.1. Making Calls

The unit will automatically select a free line when you lift the handset to make a call.
To hang up, place the handset on the cradle.




### Using the speakerphone

**1** Press **SP-PHONE/HEADSET**.
- The SP-PHONE/HEADSET indicator lights.
- A free line is automatically selected and the line indicator lights.

```
12:34PM 11/24[1]
00-00-00
```

**2** Dial a phone number.
- The dialed number is displayed.
- After a few seconds, the display will show the length of the call.
- If you misdial, press **SP-PHONE/HEADSET** and start again from step 1.

```
12:34PM 11/24[1]
1234567890
```

```
12:34PM 11/24[1]
00-00-12
```

**3** When the other party answers, talk into the **MIC** (microphone).

```
12:35PM 11/24[1]
00-01-10
```

**4** To hang up, press **SP-PHONE/HEADSET**.
- The SP-PHONE/HEADSET and the line indicator lights go out.
- The length of the call will remain on the display for a few seconds.

- In step 1, you can select a line by pressing a line button whose indicator is not lit, instead of pressing **SP-PHONE/HEADSET**.

**During speakerphone operation**

For best performance, please note the following:

- Talk alternately with the other party in a quiet room.
- If the other party has difficulty hearing you, press **VOLUME** (V) to decrease the speaker volume.
- You can switch to the handset by lifting it up. To switch back to the speakerphone, press **SP-PHONE/HEADSET**.You can place the handset on the cradle.

## To adjust the handset volume (4 levels) or the speaker volume (8 levels) while talking

To increase, press **VOLUME** (^). To decrease, press **VOLUME** (V).

Ex. Handset volume level: 2

```
Loud
Low ■■■■     High
```

"■■" shows one level.

Ex. Speaker volume level: 3

```
Loud
Low ■■■      High
```

"■" shows one level.

- The display shows the volume level for a few seconds.

## To redial the last number dialed

Lift the handset, and press **SP-PHONE/HEADSET** or a line button, and press **REDIAL**.

## To redial using the redial list (Memory Redial)

The last 10 phone numbers dialed are stored in the redial list.

1. Press **REDIAL**.
   - The last dialed number and "C●" are displayed.

   ```
   234-5678
                  C●
   ```

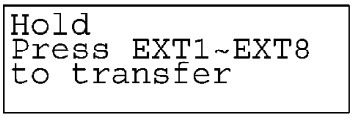
   - When the number dialed has been stored in the directory or One-Touch Dialer, the name is also displayed.
2. Scroll to the desired number by pressing (▼) or (▲).
   - You can also scroll down through the list by pressing **REDIAL**.
   - When you scroll to the most recent item, two short beeps sound.
   - To exit the list, press **EXIT**.
3. Lift the handset or press **SP-PHONE/HEADSET** or a line button.

- **To erase an item**, repeat steps 1 and 2, and press **CLEAR**.
- If "No items stored" is displayed, the list is empty.

### To put a call on hold

Press **HOLD** during a conversation.

- The line indicator light flashes.
- If using the handset, you can place it on the cradle.




### To release the hold

Press the line button.

- The other extension users can release the hold by pressing the line button.
- If another phone excluding KX-TS3282W or KX-TS3281W is connected on the same line, you can also release the hold by lifting its handset.

### What the line indicators (LINE 1 and LINE 2) mean

| | |
|---|---|
| Off | The line is free. |
| On | You are using the line. |
| Flashing twice every 2 seconds | Another extension is using the line. |
| Flashing | You place the call on hold. |
| Flashing quickly | A call is being received. |

## 5.2. Answering Calls

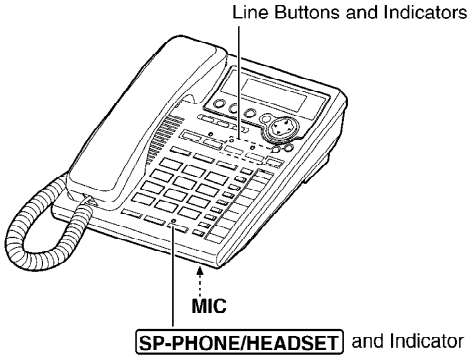
When a call is being received, the unit rings and the called line indicator flashes quickly.
"Incoming call" and the line are displayed. You can answer a call by simply lifting the handset.
If you subscribe to a Caller ID service, the calling party's information will be displayed after the first ring.
In order to view the Call ID information, please wait until the second ring to answer a call.

### Using the speakerphone

1 Press **SP-PHONE/HEADSET**.
- The SP-PHONE/HEADSET indicator lights.
- The line indicator stops flashing and remains lit.

2 Talk into the **MIC** (microphone).

3 To hang up, press **SP-PHONE/HEADSET**.
- The SP-PHONE/HEADSET indicator and the line indicator lights go out.




- You can answer a call by pressing the called line button, instead of pressing **SP-PHONE/HEADSET**.
- When the ringer volume for a selected line is set to OFF, the unit will not ring when that line is called.

## 5.3. FLASH Button

Pressing **FLASH** allows you to use special features of your host PBX such as transferring an extension call or accessing special telephone services (optional) such as call waiting.

• Pressing **FLASH** causes to disable the Temporary Tone Dialing mode or the mute.

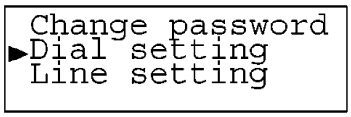
### Selecting the flash time

The flash time depends on your telephone exchange or host PBX. You can select the following flash times: "80, 90, 100, 110, 200, 250, 300, 400, 600, 700 ms (milliseconds)". Your phone comes from the factory set to "600 ms".

**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off.**

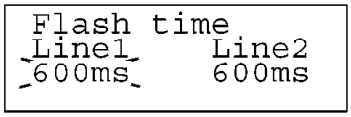
1 Press **FUNCTION/EDIT**.

2 Scroll to "Dial setting" by pressing ▼ or ▲, and press ▶.




3 Scroll to "Set flash time" by pressing ▼ or ▲.

4 Press ▶.
• The current settings are displayed.




5 Select the desired time by pressing ▼ or ▲ for each line.
To move to the other line, press ▶ or ◀.

6 Press **ENTER**.
• A beep sounds.
• To exit the programming mode, press **EXIT**.

• You can exit the programming mode any time by pressing **EXIT**.
• If the unit is connected via a PBX, PBX functions (transferring a call etc.) might not work correctly. Consult your PBX supplier for the correct setting.

## 5.4. Directory

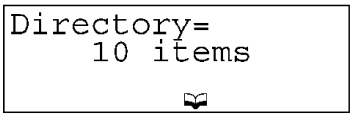
**You can store up to 50 names and phone numbers in the directory. All directory items are sorted by the rst word in alphabetical order. Using the directory, you can make a call by selecting a name on the display.**

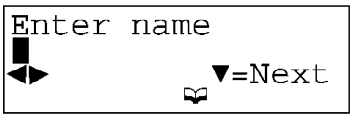
**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/HEADSET indicator light is off.**

### 5.4.1. Storing Names and Numbers

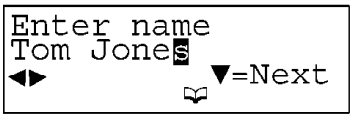
1 Press **FUNCTION/EDIT**.
Scroll to "Save directory" by pressing ▼ or ▲.

2 Press ▶.
- The display shows the number of stored items then "Enter name".

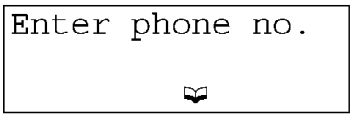


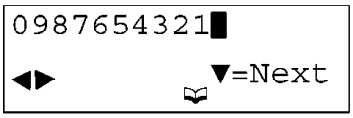

3 Enter a name, up to 15 characters with the dialing buttons (0 to 9).
- To move the cursor, press ◀ or ▶.
- If a name is not required, press ▼. (Next key) and go to step 5.



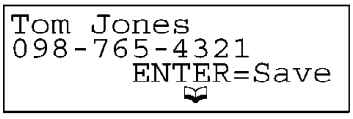

4 Press ▼ (Next key).




5 Enter a phone number up to 22 digits.
- Each time you press **CLEAR**, a digit is erased. To erase all of the digits, press and hold **CLEAR**.




6 Press ▼ (Next key).
- If you want to change the name or number, press ▲ to reach the desired display and change it.




7 Press **ENTER** (Save key).
- A beep sounds.
- To continue storing other items, repeat from step 2. To exit the programming mode, press **EXIT**.

- You can exit the programming mode any time by pressing **EXIT**.
- If a pause is required for dialing, press **PAUSE** where needed. If reuired, you can also insert **FLASH** in a phone number. Pressing **PAUSE** or **FLASH** counts as one digit.
- If the display shows "Directory full" in step 2, press **EXIT**.

### 5.4.2. Selecting characters to enter names

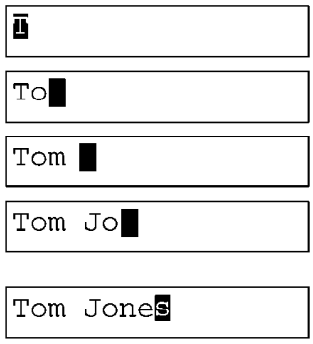
The dialing buttons ( [0] to [9] ) can be used to enter letters and symbols. Pressing each button selects a character as shown below.

| | Number of times key is pressed | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Keys** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| [1] | # | & | ' | ( | ) | * | , | – | . | / | 1 |
| [2] | a | b | c | A | B | C | 2 | | | | |
| [3] | d | e | f | D | E | F | 3 | | | | |
| [4] | g | h | i | G | H | I | 4 | | | | |
| [5] | j | k | l | J | K | L | 5 | | | | |
| [6] | m | n | o | M | N | O | 6 | | | | |
| [7] | p | q | r | s | P | Q | R | S | 7 | | |
| [8] | t | u | v | T | U | V | 8 | | | | |
| [9] | w | x | y | z | W | X | Y | Z | 9 | | |
| [0] | 0 | Space | | | | | | | | | |
| [◀] | Moves the cursor to the left. | | | | | | | | | | |
| [▶] | Moves the cursor to the right. (To enter another character using the same number key, move the cursor to the next space.) | | | | | | | | | | |

**If you make a mistake while entering a name:**
Use [◀] or [▶] to move the cursor to the incorrect character, press [CLEAR] to delete and enter the correct character. Each time you press [CLEAR] , a character is erased.
To erase all characters, press and hold [CLEAR].

**For example, to enter "Tom Jones":**

1. Press [8] four times.
2. Press [6] three times, then press [▶] .
3. Press [6] once, then press [▶] twice.
4. Press [5] four times, press [6] three times, then press [▶].
5. Press [6] twice, press [3] twice, then press [7] four times.



### 5.4.3. Finding Stored Items

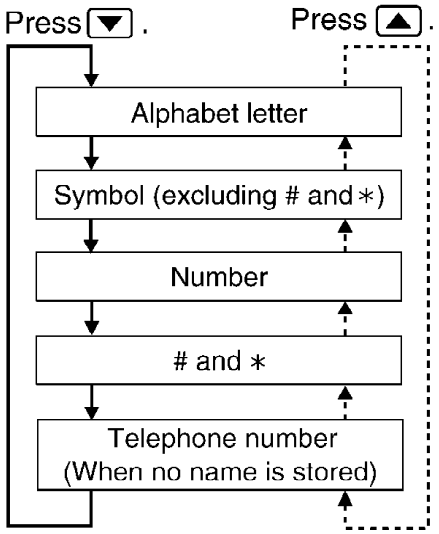
**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/ HEADSET indicator light is off.**

**1** Press ◀ or ▶ to enter the directory list.

- You can go to the Caller List by pressing ▶.

**2** Scroll to the desired item by pressing ▼ or ▲.

- All directory items are stored in the order shown on the right.




**To search for a name by initial:**

(1) Press the dialing button for the first letter of the desired name until any name with the same initial is displayed (see the Index table below).
Ex. To find "Frank", press 3 repeatedly until the first item under "F" is displayed .

(2) Press ▼ repeatedly until the name is displayed.

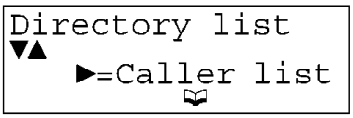
- You can exit the directory list any time by pressing EXIT.
- If "No items stored" is displayed in step 1, the directory is empty. To exit the directory list, press EXIT.
- If you do not press any buttons for 60 seconds, the unit will exit the directory list.

## Index table

| Keys | Index | Keys | Index |
|---|---|---|---|
| 1 | Space, Other symbols, 1 | 6 | M, N, O, 6 |
| 2 | A, B, C, 2 | 7 | P, Q, R, S, 7 |
| 3 | D, E, F, 3 | 8 | T, U, V, 8 |
| 4 | G, H, I, 4 | 9 | W, X, Y, Z, 9 |
| 5 | J, K, L, 5 | 0 | 0 |

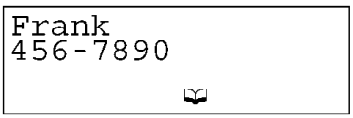
### 5.4.4. Dialing

1 Press ◄ or ► to enter the directoty list.




2 Scroll to the desired item that you want to dial by pressing ▼ or ▲.

- To exit the directory list, press **EXIT**.

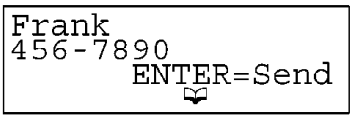



3 Lift the handset or press **SP-PHONE/HEADSET** or a line button.

- The number is dialed automatically.

4 To hang up, place the handset on the cradle or press **SP-PHONE/HEADSET** .

- You can also dial the stored number as follows:
  1. Lift the handset or press **SP-PHONE/HEADSET** or a line button.
  2. Find the desired item (follow steps 1 and 2 above).
  3. Press **ENTER** (Send key).

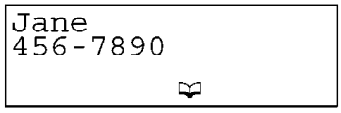


### 5.4.5. Editing

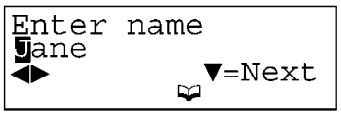
**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/ HEADSET indicator light is off.**

**1** Press ◄ or ► to enter the directory list.

**2** Scroll to the directory item you want to change by pressing ▼ or ▲.

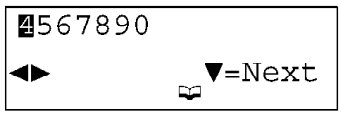



**3** Press **FUNCTION/EDIT**.

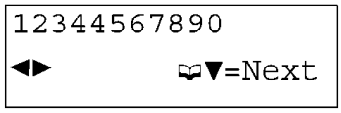



**4** Edit the name using the dialing buttons (0 to 9), up to 15 characters.
- To move the cursor, press ◄ or ►.
- If you do not need to change the name, press ▼ (Next Key) and go to step 6.

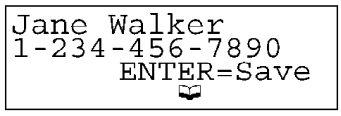
**5** Press ▼ (Next Key).




**6** Add a number to the current number.
- Each time you press **CLEAR**, a digit is erased. To erase all of the digits, press and hold **CLEAR**.
- To move the cursor, press ◄ or ►.
- If you do not need to change the number, press ▼ (Next Key) and go to step 8.




**7** Press ▼ (Next Key).
- If you want to change the name or number, press ▲ to reach the desired display and change it.




**8** Press **ENTER** (Save Key).
- A beep sounds.
- To continue editing other items, repeat from step 2.

- You can exit the programming mode any time by pressing **EXIT**.

### 5.4.6. Erasing

**Make sure that the handset is on the cradle, the AC adaptor is connected and the SP-PHONE/ HEADSET indicator light is off.**

1 Press ◀ or ▶ to enter the directory list.

2 Scroll to the directory item that you want to erase by pressing ▼ or ▲ .

3 Press **CLEAR**
- To stop erasing, press ◀ (No key).

```
Clear?
◀=No    ENTER=Yes
```

4 Press **ENTER** (Yes key) or **CLEAR**.
- A beep sounds and the item is erased.
- To erase other items, repeat from step 2.
- To exit the directory list, press **EXIT**.

```
Clear
```

# 6. DISASSEMBLY INSTRUCTIONS

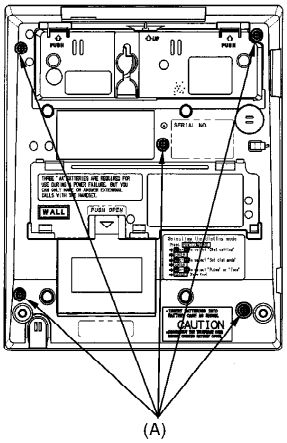



Fig. 1

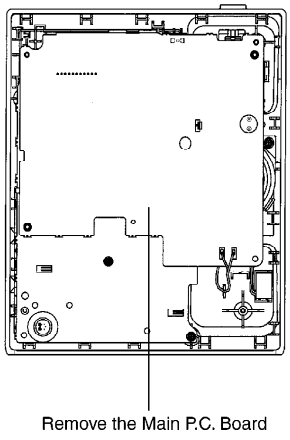



Fig. 2

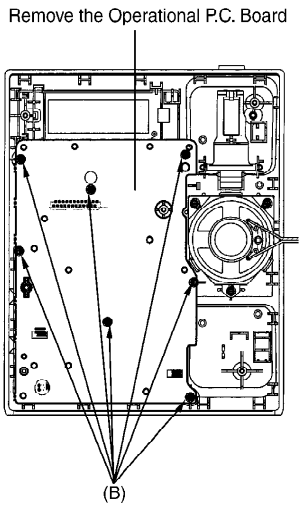
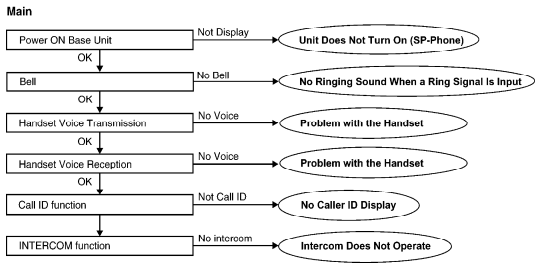



Fig. 3

| Shown in Fig. | To remove. | Remove. |
|---|---|---|
| 1 | Lower Cabinet | Screws (2.6 × 12).....(A) × 5 |
| 2 | Main P.C. Board | Main P.C. Board |
| 3 | Operational P.C. Board | Screws (2.6 × 8).....(B) × 7 |
| | | Operational P.C. Board |

# 7. TROUBLE SHOOTING GUIDE

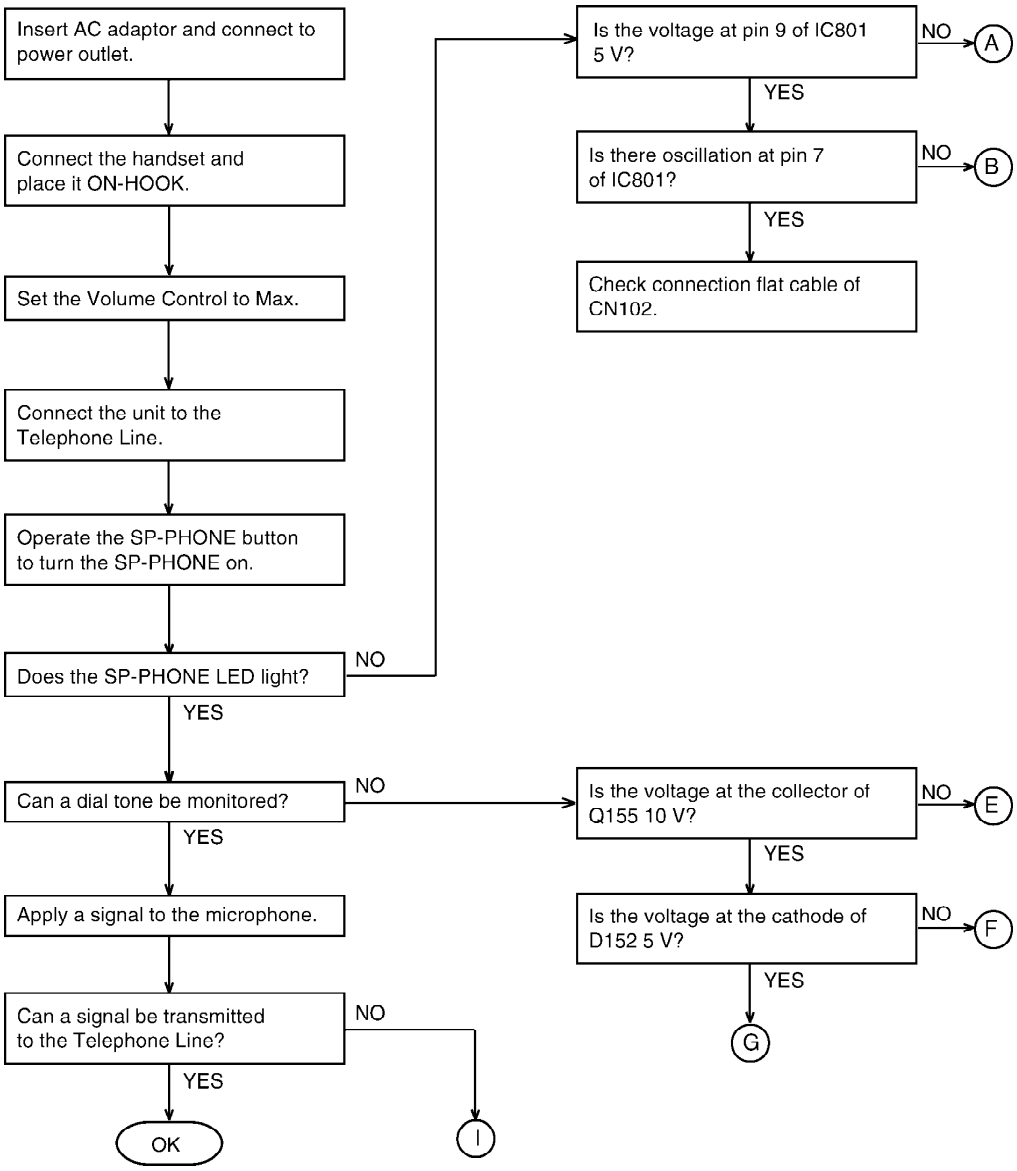
**( )...Line 2**

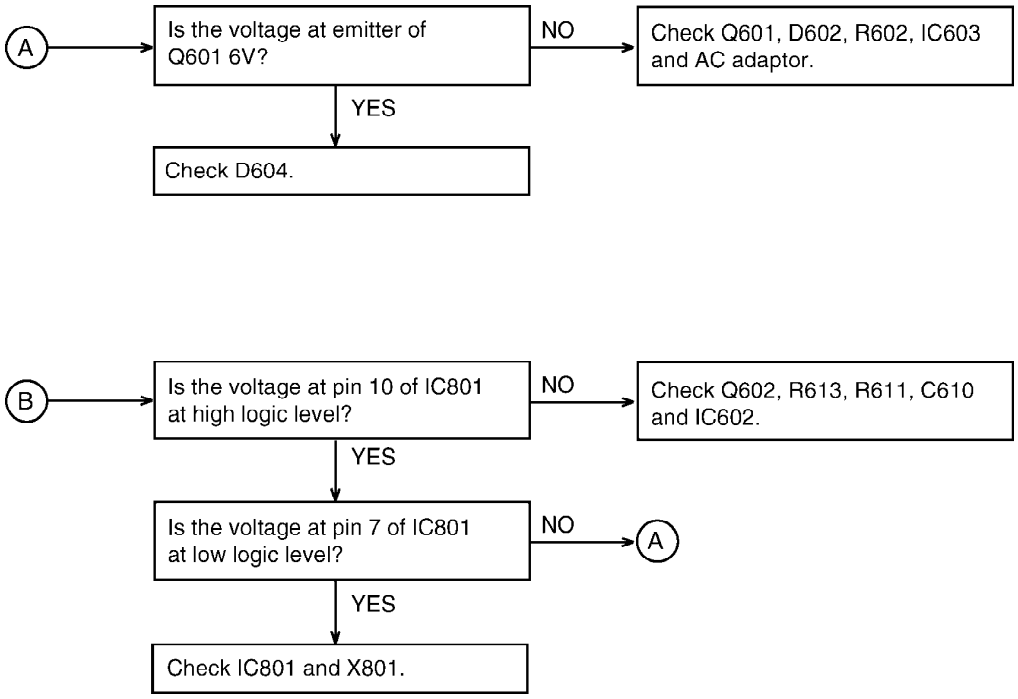


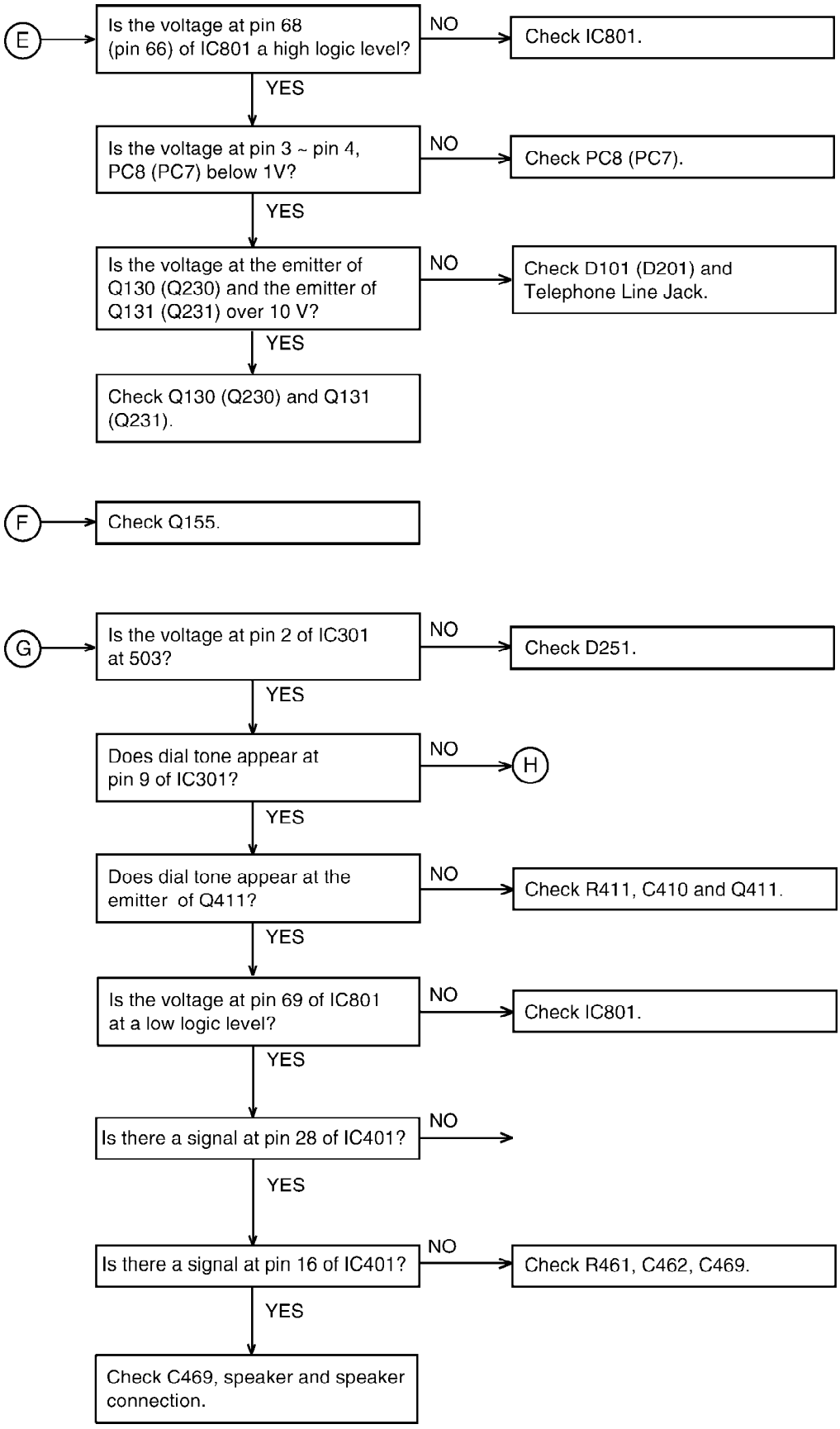

**Cross Reference:**
**Unit Does Not Turn On (SP-Phone) ().**
**No Ringing Sound When a Ring Signal Is Input ().**
**Problems with the Handset ().**
**No Caller ID Display ().**
**Intercom Does Not Operate ().**

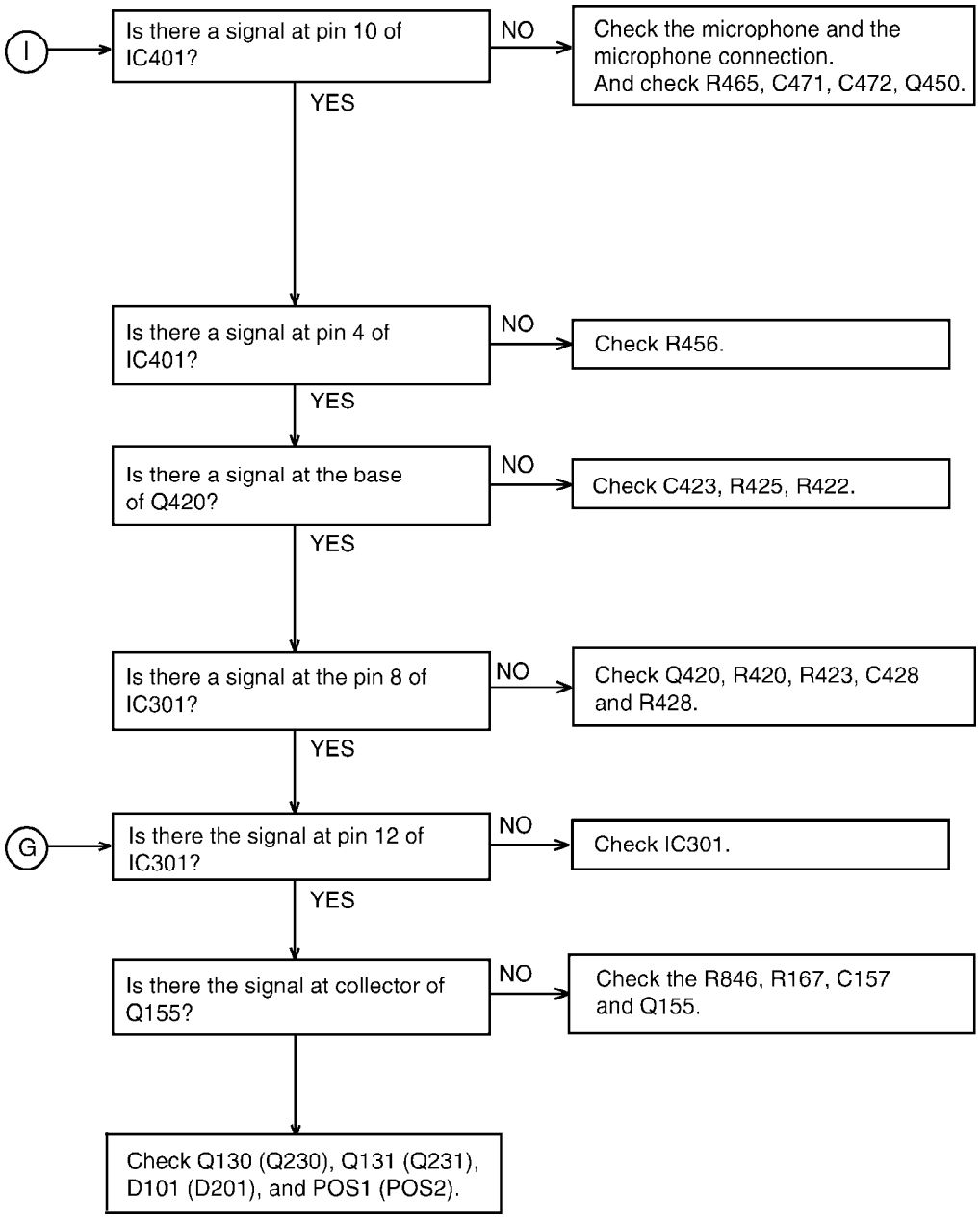
## 7.1. Unit Does Not Turn On (SP-Phone)

**( )...Line 2**

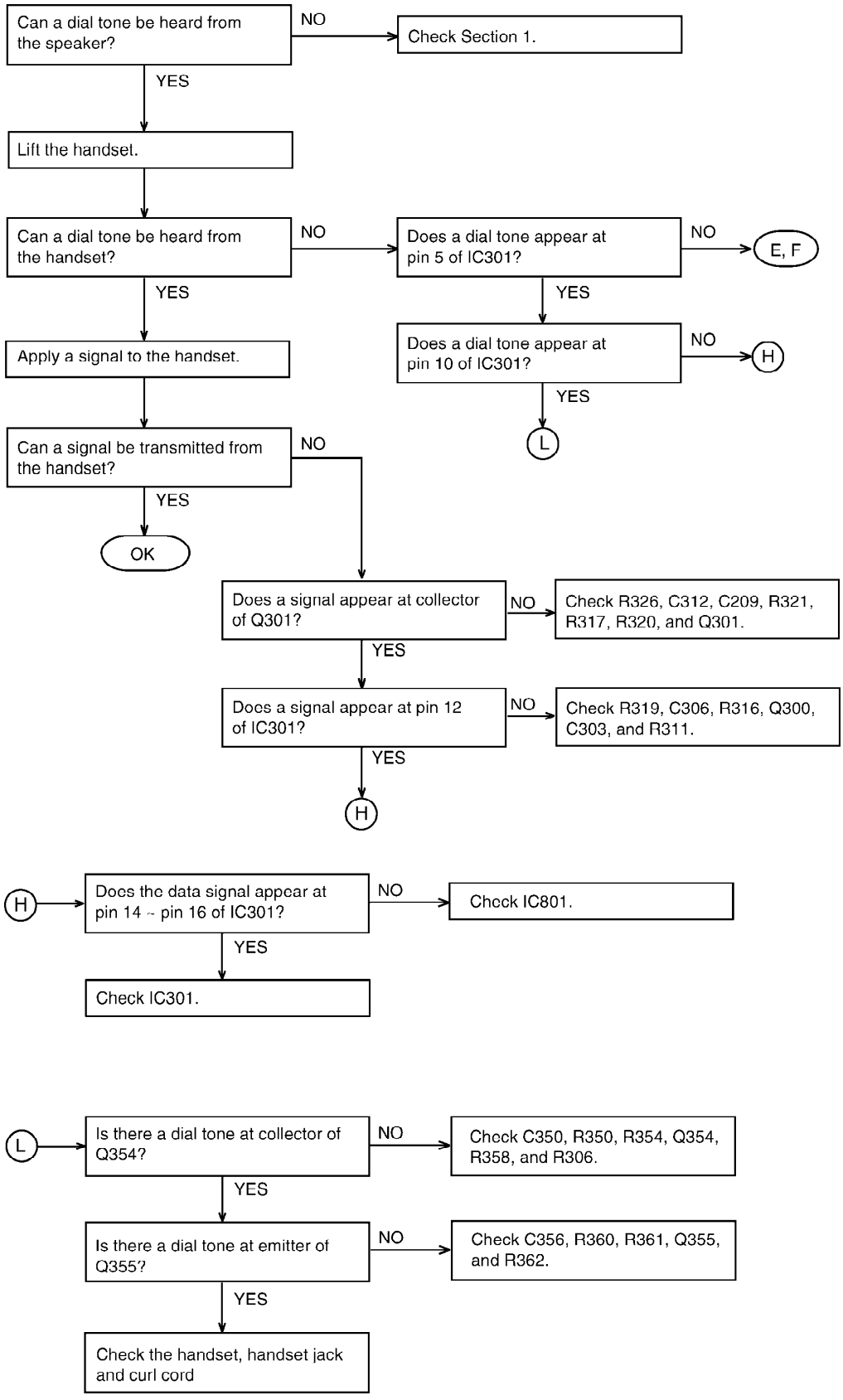

Insert AC adaptor and connect to power outlet.
Connect the handset and place it ON-HOOK.
Set the Volume Control to Max.
Connect the unit to the Telephone Line.
Operate the SP-PHONE button to turn the SP-PHONE on.
Does the SP-PHONE LED light?
NO
YES
Can a dial tone be monitored?
NO
YES
Apply a signal to the microphone.
Can a signal be transmitted to the Telephone Line?
NO
YES
OK
I
Is the voltage at pin 9 of IC801 5 V?
NO
A
YES
Is there oscillation at pin 7 of IC801?
NO
B
YES
Check connection flat cable of CN102.
Is the voltage at the collector of Q155 10 V?
NO
E
YES
Is the voltage at the cathode of D152 5 V?
NO
F
YES
G


A
Is the voltage at emitter of Q601 6V?
NO
Check Q601, D602, R602, IC603 and AC adaptor.
YES
Check D604.
B
Is the voltage at pin 10 of IC801 at high logic level?
NO
Check Q602, R613, R611, C610 and IC602.
YES
Is the voltage at pin 7 of IC801 at low logic level?
NO
A
YES
Check IC801 and X801.

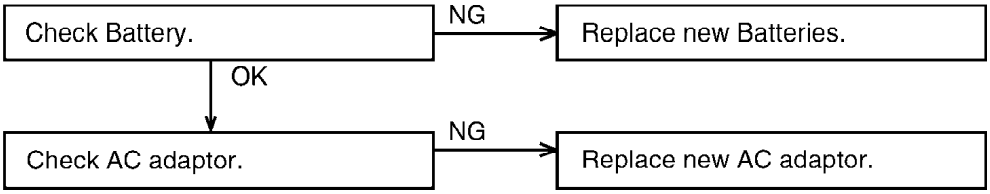

E
Is the voltage at pin 68 (pin 66) of IC801 a high logic level?
NO
Check IC801.
YES
Is the voltage at pin 3 ~ pin 4, PC8 (PC7) below 1V?
NO
Check PC8 (PC7).
YES
Is the voltage at the emitter of Q130 (Q230) and the emitter of Q131 (Q231) over 10 V?
NO
Check D101 (D201) and Telephone Line Jack.
YES
Check Q130 (Q230) and Q131 (Q231).
F
Check Q155.
G
Is the voltage at pin 2 of IC301 at 503?
NO
Check D251.
YES
Does dial tone appear at pin 9 of IC301?
NO
H
YES
Does dial tone appear at the emitter of Q411?
NO
Check R411, C410 and Q411.
YES
Is the voltage at pin 69 of IC801 at a low logic level?
NO
Check IC801.
YES
Is there a signal at pin 28 of IC401?
NO
YES
Is there a signal at pin 16 of IC401?
NO
Check R461, C462, C469.
YES
Check C469, speaker and speaker connection.


I
Is there a signal at pin 10 of IC401?
NO
Check the microphone and the microphone connection. And check R465, C471, C472, Q450.
YES
Is there a signal at pin 4 of IC401?
NO
Check R456.
YES
Is there a signal at the base of Q420?
NO
Check C423, R425, R422.
YES
Is there a signal at the pin 8 of IC301?
NO
Check Q420, R420, R423, C428 and R428.
YES
G
Is there the signal at pin 12 of IC301?
NO
Check IC301.
YES
Is there the signal at collector of Q155?
NO
Check the R846, R167, C157 and Q155.
Check Q130 (Q230), Q131 (Q231), D101 (D201), and POS1 (POS2).

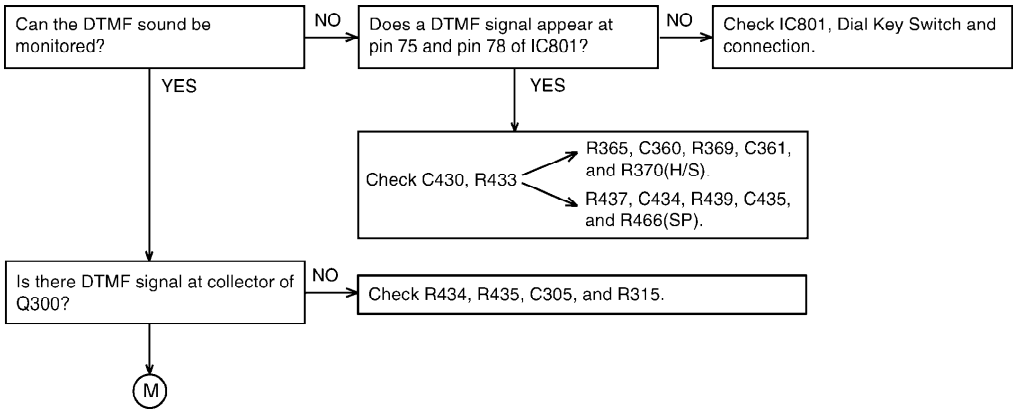
## 7.2. Problems with the Handset



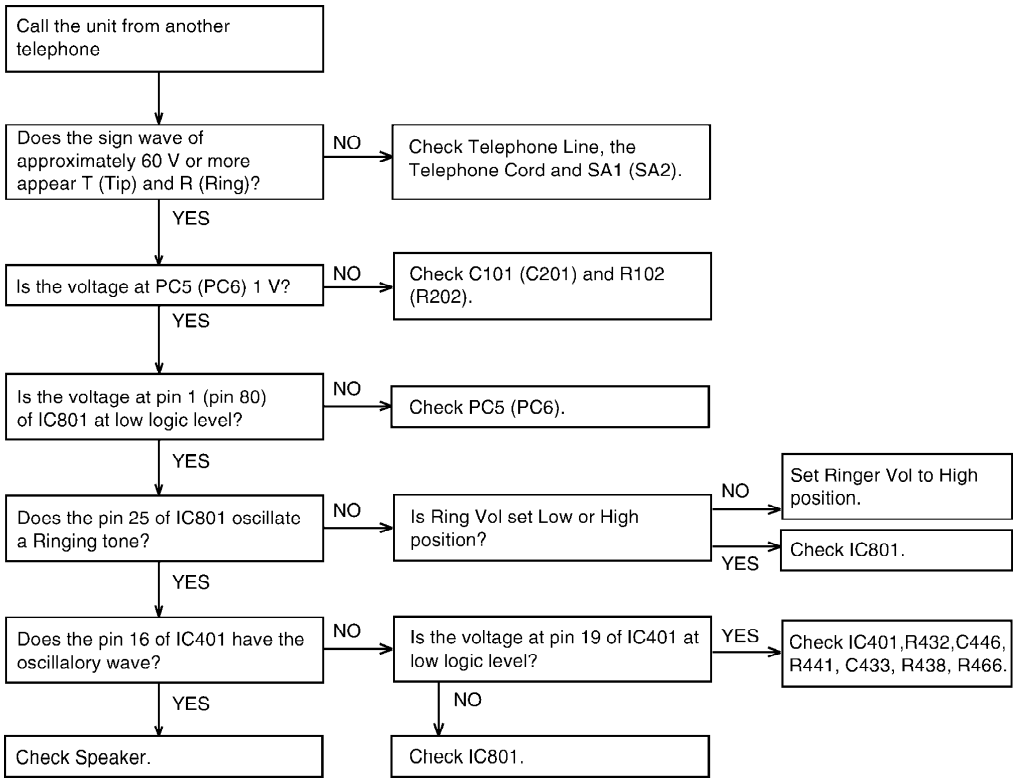

## 7.3. Unit Turns Off When Pulse Dialing



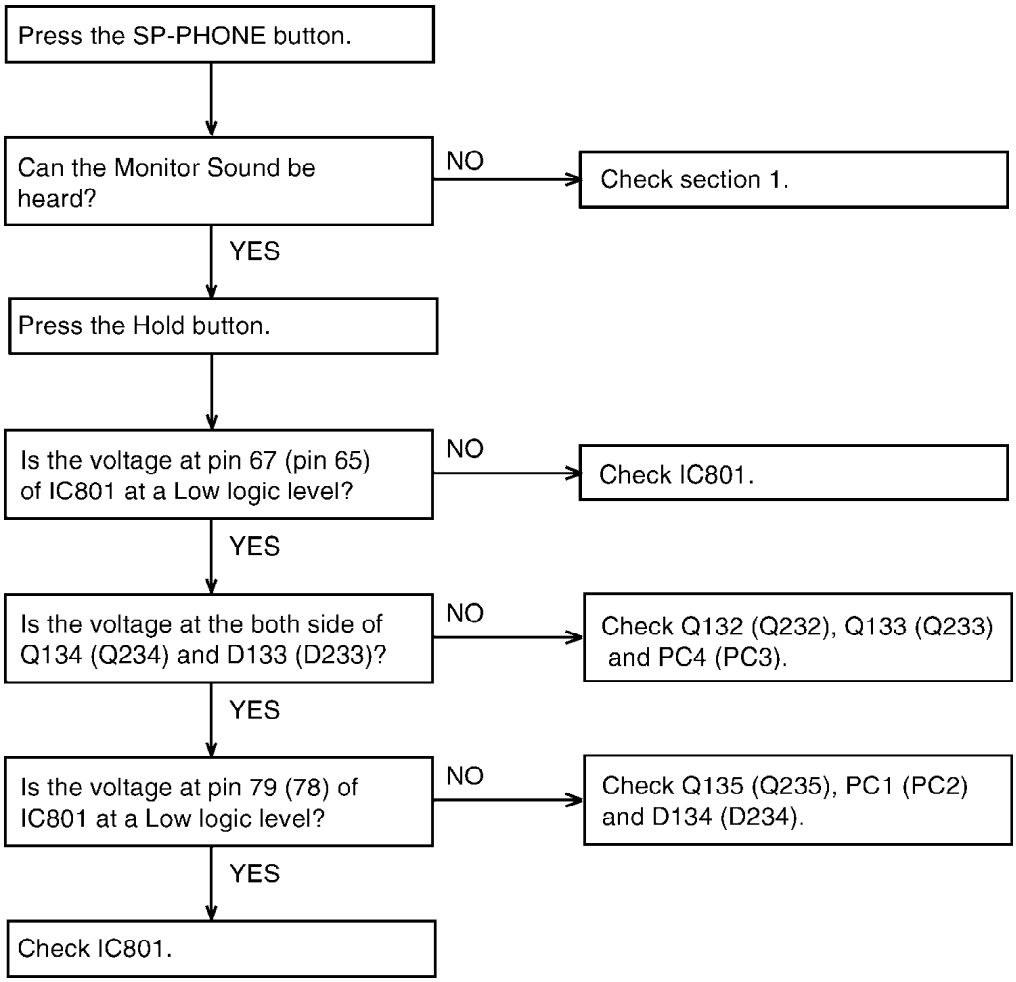

## 7.4. Tone Dialing Problems


Can the DTMF sound be monitored?
NO
Does a DTMF signal appear at pin 75 and pin 78 of IC801?
NO
Check IC801, Dial Key Switch and connection.
YES
YES
Check C430, R433
R365, C360, R369, C361, and R370(H/S).
R437, C434, R439, C435, and R466(SP).
Is there DTMF signal at collector of Q300?
NO
Check R434, R435, C305, and R315.
M

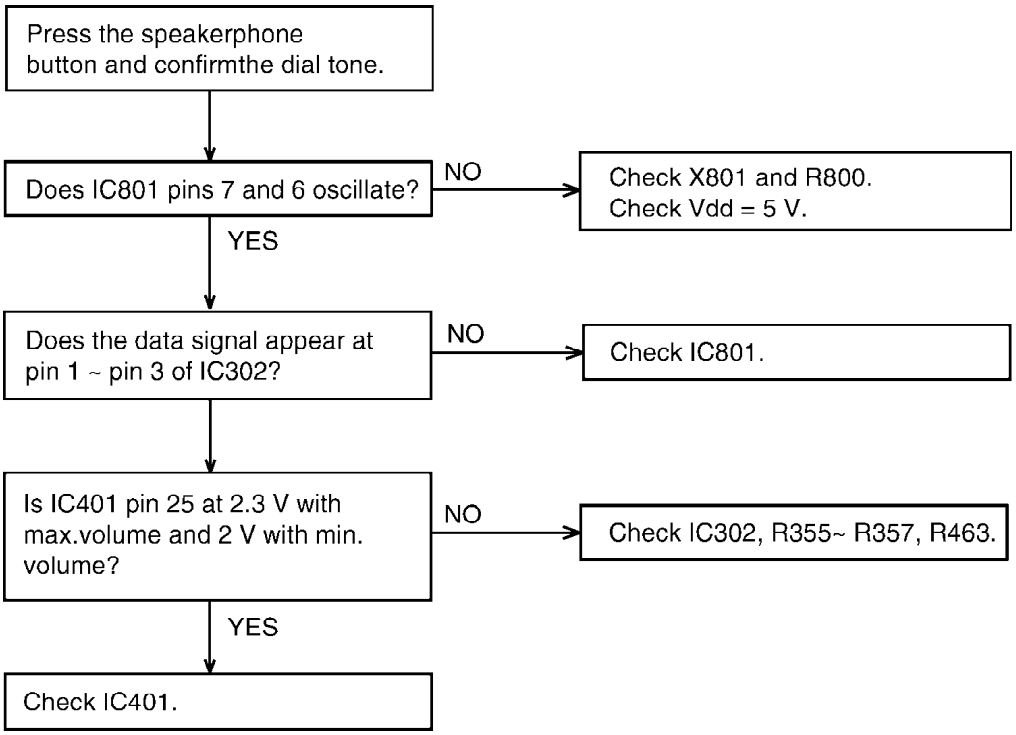
## 7.5. No Ringing Sound When a Ring Signal Is Input


Call the unit from another telephone
Does the sign wave of approximately 60 V or more appear T (Tip) and R (Ring)?
NO
Check Telephone Line, the Telephone Cord and SA1 (SA2).
YES
Is the voltage at PC5 (PC6) 1 V?
NO
Check C101 (C201) and R102 (R202).
YES
Is the voltage at pin 1 (pin 80) of IC801 at low logic level?
NO
Check PC5 (PC6).
YES
Does the pin 25 of IC801 oscillate a Ringing tone?
NO
Is Ring Vol set Low or High position?
NO
Set Ringer Vol to High position.
YES
Check IC801.
YES
Does the pin 16 of IC401 have the oscillalory wave?
NO
Is the voltage at pin 19 of IC401 at low logic level?
YES
Check IC401,R432,C446, R441, C433, R438, R466.
YES
NO
Check Speaker.
Check IC801.

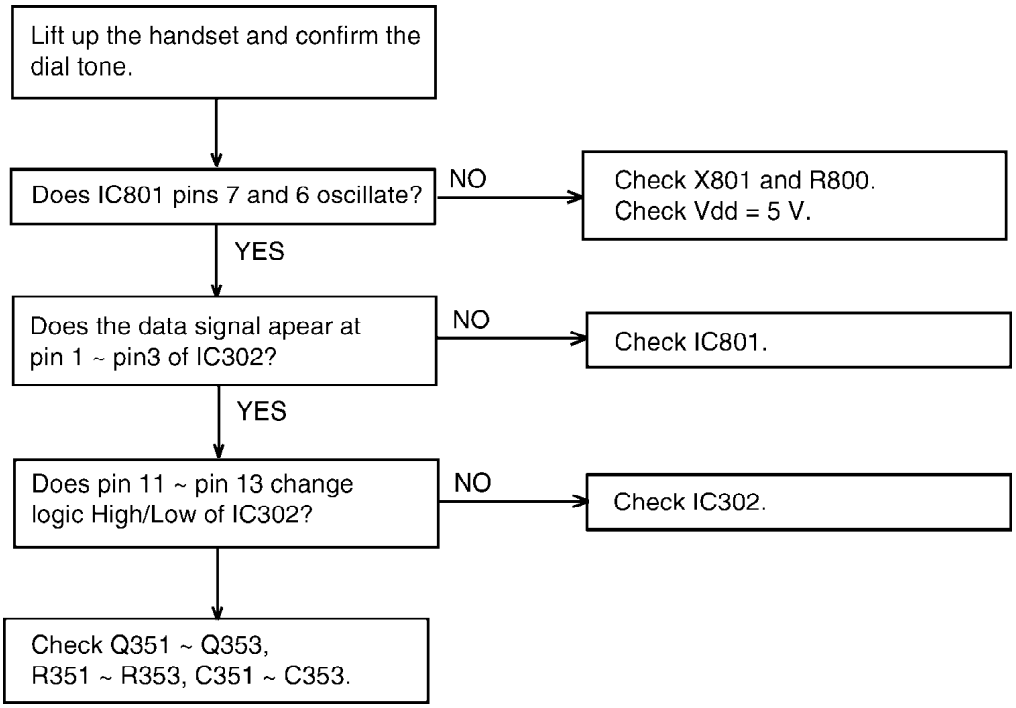
## 7.6. Unit Does Not Hold


Press the SP-PHONE button.
Can the Monitor Sound be heard?
NO
Check section 1.
YES
Press the Hold button.
Is the voltage at pin 67 (pin 65) of IC801 at a Low logic level?
NO
Check IC801.
YES
Is the voltage at the both side of Q134 (Q234) and D133 (D233)?
NO
Check Q132 (Q232), Q133 (Q233) and PC4 (PC3).
YES
Is the voltage at pin 79 (78) of IC801 at a Low logic level?
NO
Check Q135 (Q235), PC1 (PC2) and D134 (D234).
YES
Check IC801.

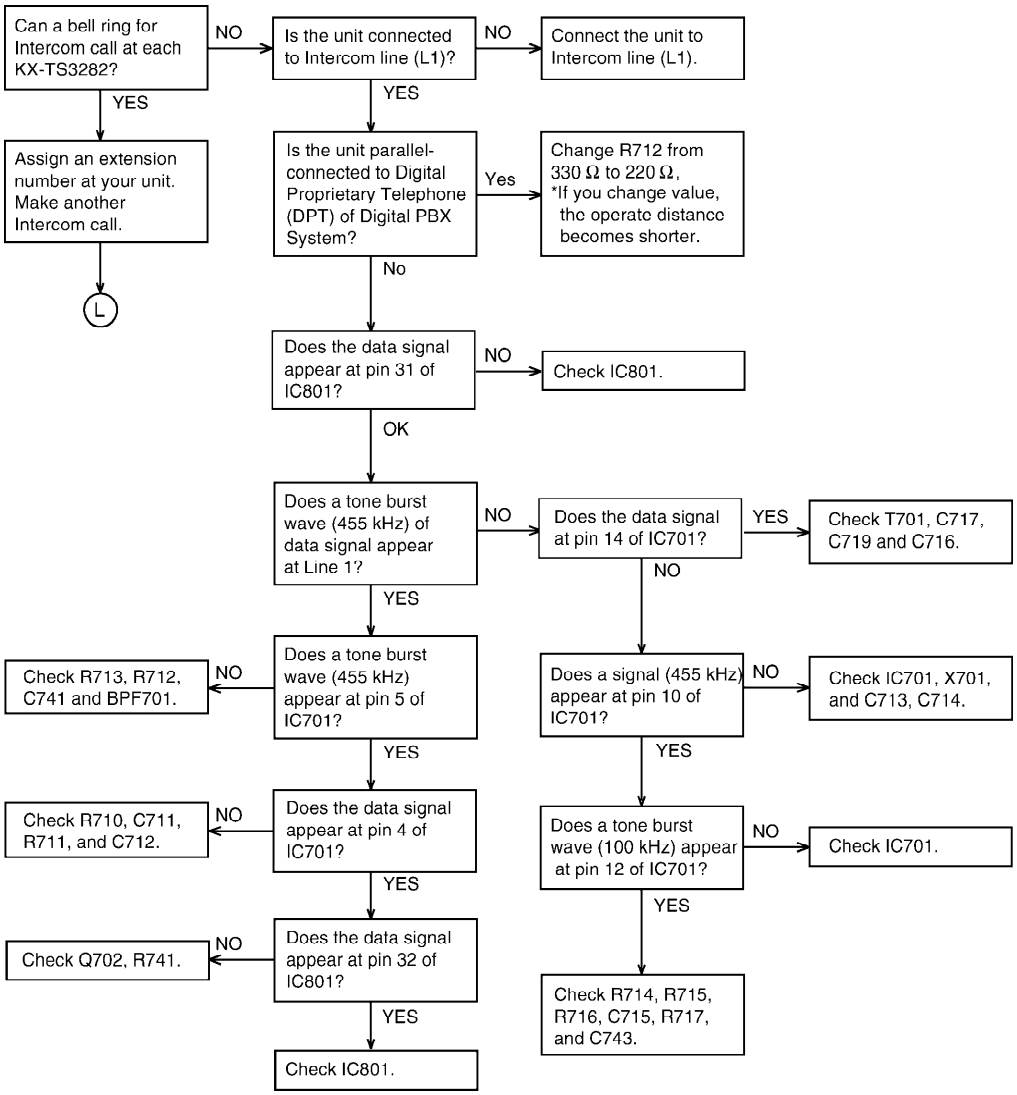
## 7.7. If the Electronic Volume of the Speakerphone Does Not Work

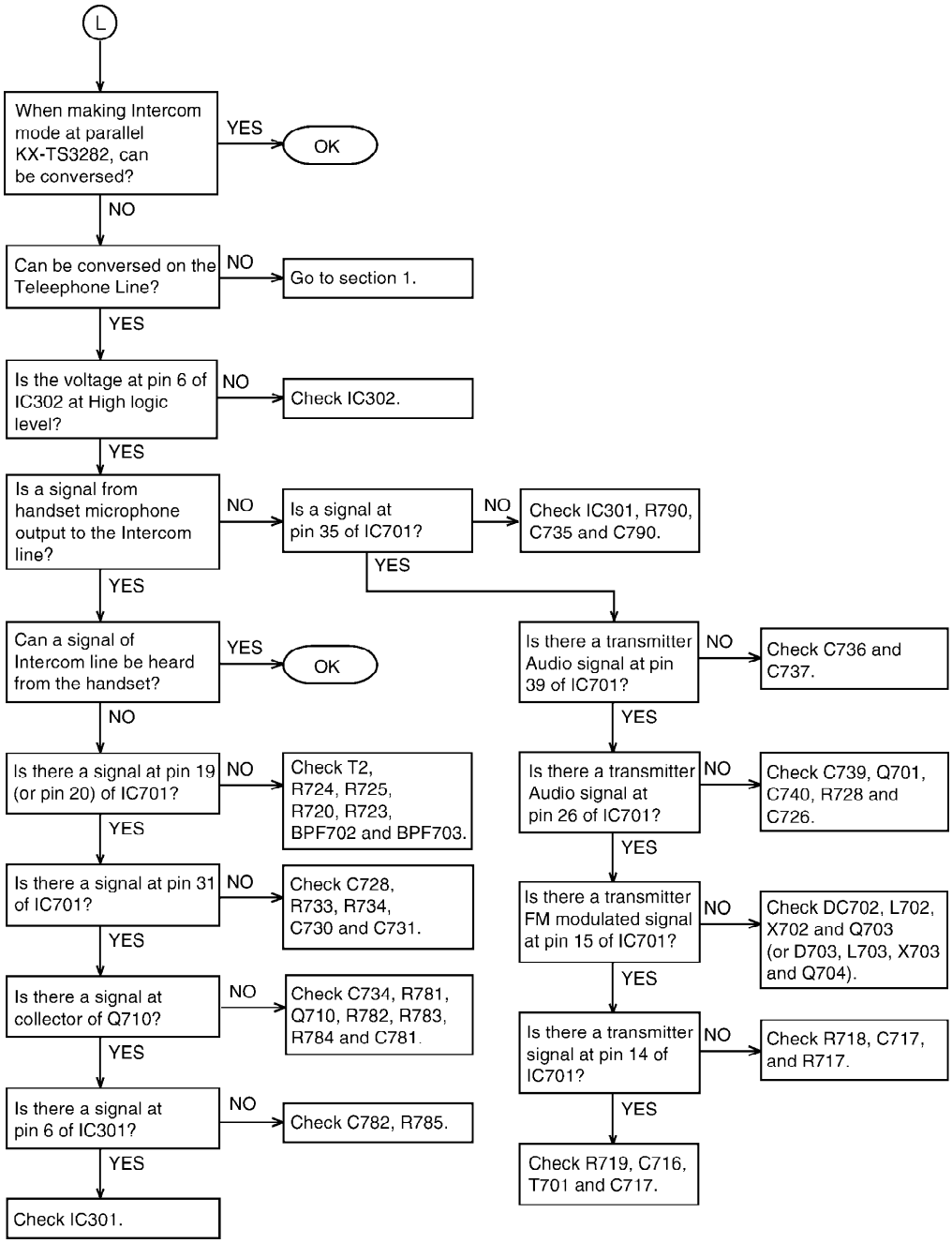

Press the speakerphone button and confirmthe dial tone.
Does IC801 pins 7 and 6 oscillate?
NO
Check X801 and R800. Check Vdd = 5 V.
YES
Does the data signal appear at pin 1 ~ pin 3 of IC302?
NO
Check IC801.
Is IC401 pin 25 at 2.3 V with max.volume and 2 V with min. volume?
NO
Check IC302, R355~ R357, R463.
YES
Check IC401.

## 7.8. If the Electronic Volume of the Handset Does Not Work

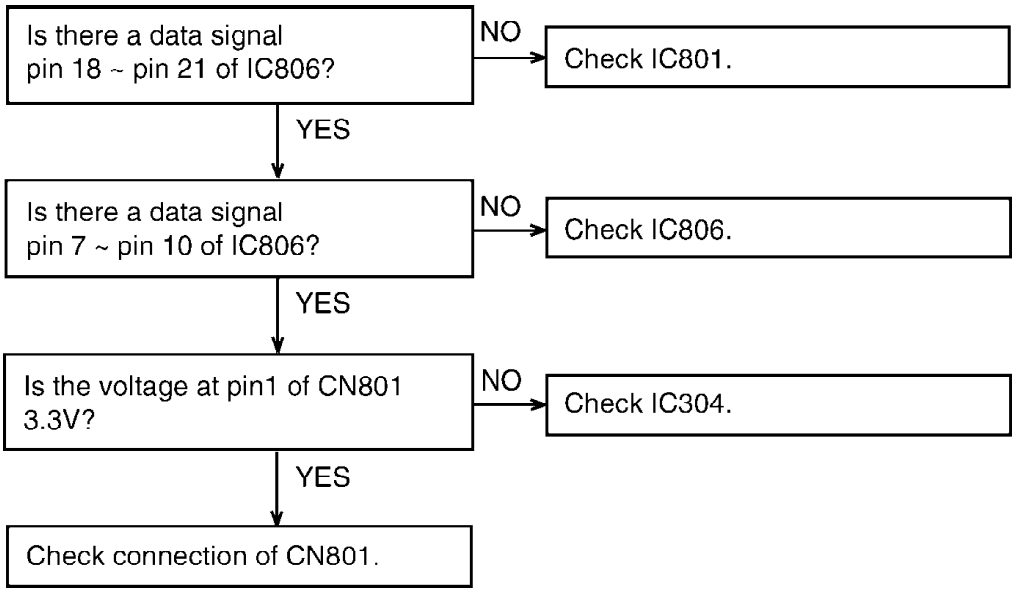

Lift up the handset and confirm the dial tone.
Does IC801 pins 7 and 6 oscillate?
NO
Check X801 and R800. Check Vdd = 5 V.
YES
Does the data signal apear at pin 1 ~ pin3 of IC302?
NO
Check IC801.
YES
Does pin 11 ~ pin 13 change logic High/Low of IC302?
NO
Check IC302.
Check Q351 ~ Q353, R351 ~ R353, C351 ~ C353.

## 7.9. Intercom Does Not Operate

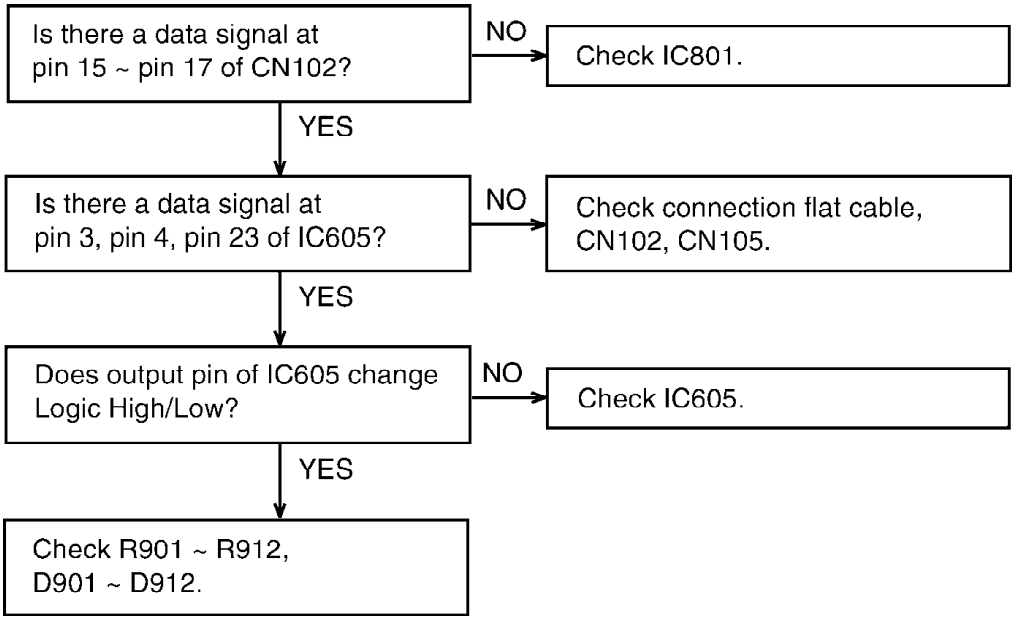

Can a bell ring for Intercom call at each KX-TS3282?
NO
Is the unit connected to Intercom line (L1)?
NO
Connect the unit to Intercom line (L1).
YES
YES
Assign an extension number at your unit. Make another Intercom call.
Is the unit parallel-connected to Digital Proprietary Telephone (DPT) of Digital PBX System?
Yes
Change R712 from 330 Ω to 220 Ω, *If you change value, the operate distance becomes shorter.
No
L
Does the data signal appear at pin 31 of IC801?
NO
Check IC801.
OK
Does a tone burst wave (455 kHz) of data signal appear at Line 1?
NO
Does the data signal at pin 14 of IC701?
YES
Check T701, C717, C719 and C716.
NO
YES
Check R713, R712, C741 and BPF701.
NO
Does a tone burst wave (455 kHz) appear at pin 5 of IC701?
Does a signal (455 kHz) appear at pin 10 of IC701?
NO
Check IC701, X701, and C713, C714.
YES
YES
Check R710, C711, R711, and C712.
NO
Does the data signal appear at pin 4 of IC701?
Does a tone burst wave (100 kHz) appear at pin 12 of IC701?
NO
Check IC701.
YES
YES
Check Q702, R741.
NO
Does the data signal appear at pin 32 of IC801?
Check R714, R715, R716, C715, R717, and C743.
YES
Check IC801.


L
When making Intercom mode at parallel KX-TS3282, can be conversed?
YES
OK
NO
Can be conversed on the Teleephone Line?
NO
Go to section 1.
YES
Is the voltage at pin 6 of IC302 at High logic level?
NO
Check IC302.
YES
Is a signal from handset microphone output to the Intercom line?
NO
Is a signal at pin 35 of IC701?
NO
Check IC301, R790, C735 and C790.
YES
YES
Can a signal of Intercom line be heard from the handset?
YES
OK
NO
Is there a signal at pin 19 (or pin 20) of IC701?
NO
Check T2, R724, R725, R720, R723, BPF702 and BPF703.
YES
Is there a signal at pin 31 of IC701?
NO
Check C728, R733, R734, C730 and C731.
YES
Is there a signal at collector of Q710?
NO
Check C734, R781, Q710, R782, R783, R784 and C781.
YES
Is there a signal at pin 6 of IC301?
NO
Check C782, R785.
YES
Check IC301.
Is there a transmitter Audio signal at pin 39 of IC701?
NO
Check C736 and C737.
YES
Is there a transmitter Audio signal at pin 26 of IC701?
NO
Check C739, Q701, C740, R728 and C726.
YES
Is there a transmitter FM modulated signal at pin 15 of IC701?
NO
Check DC702, L702, X702 and Q703 (or D703, L703, X703 and Q704).
YES
Is there a transmitter signal at pin 14 of IC701?
NO
Check R718, C717, and R717.
YES
Check R719, C716, T701 and C717.

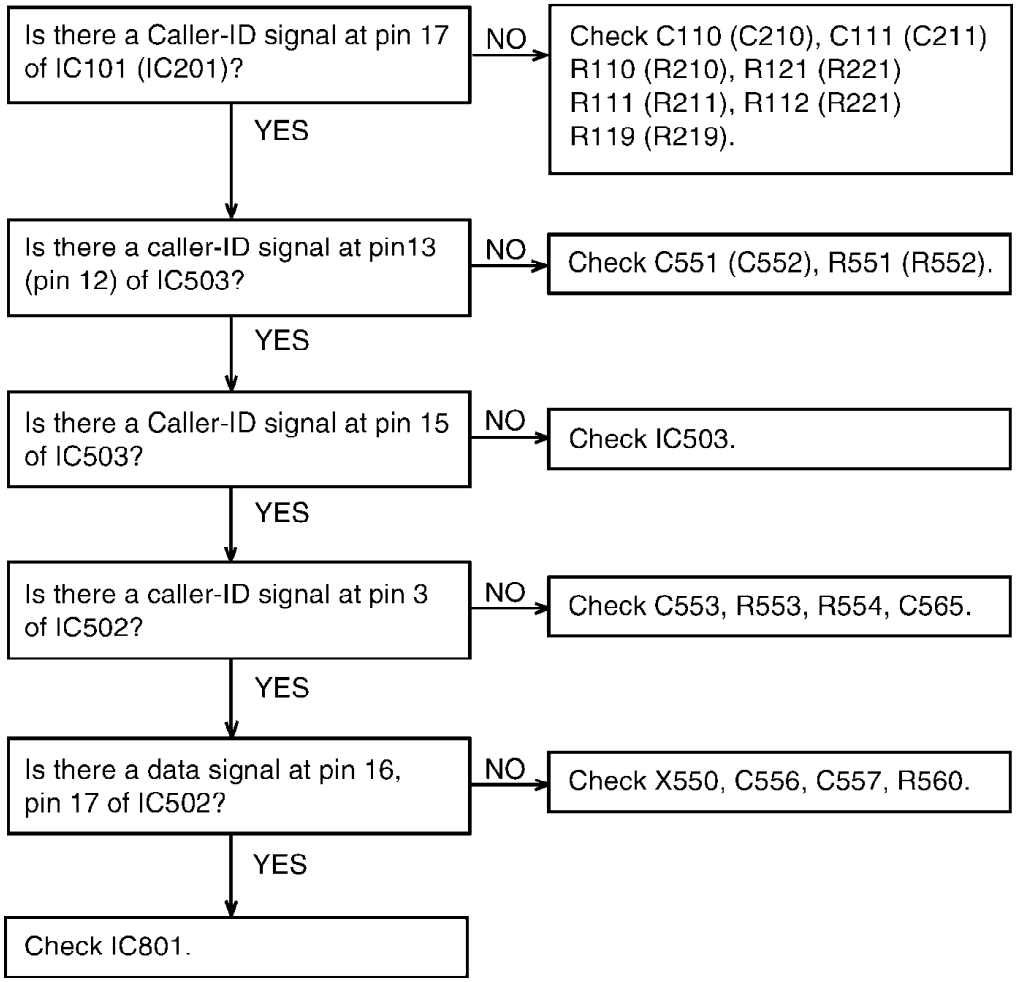
## 7.10. No LCD Display




## 7.11. LED Is Not Turned On

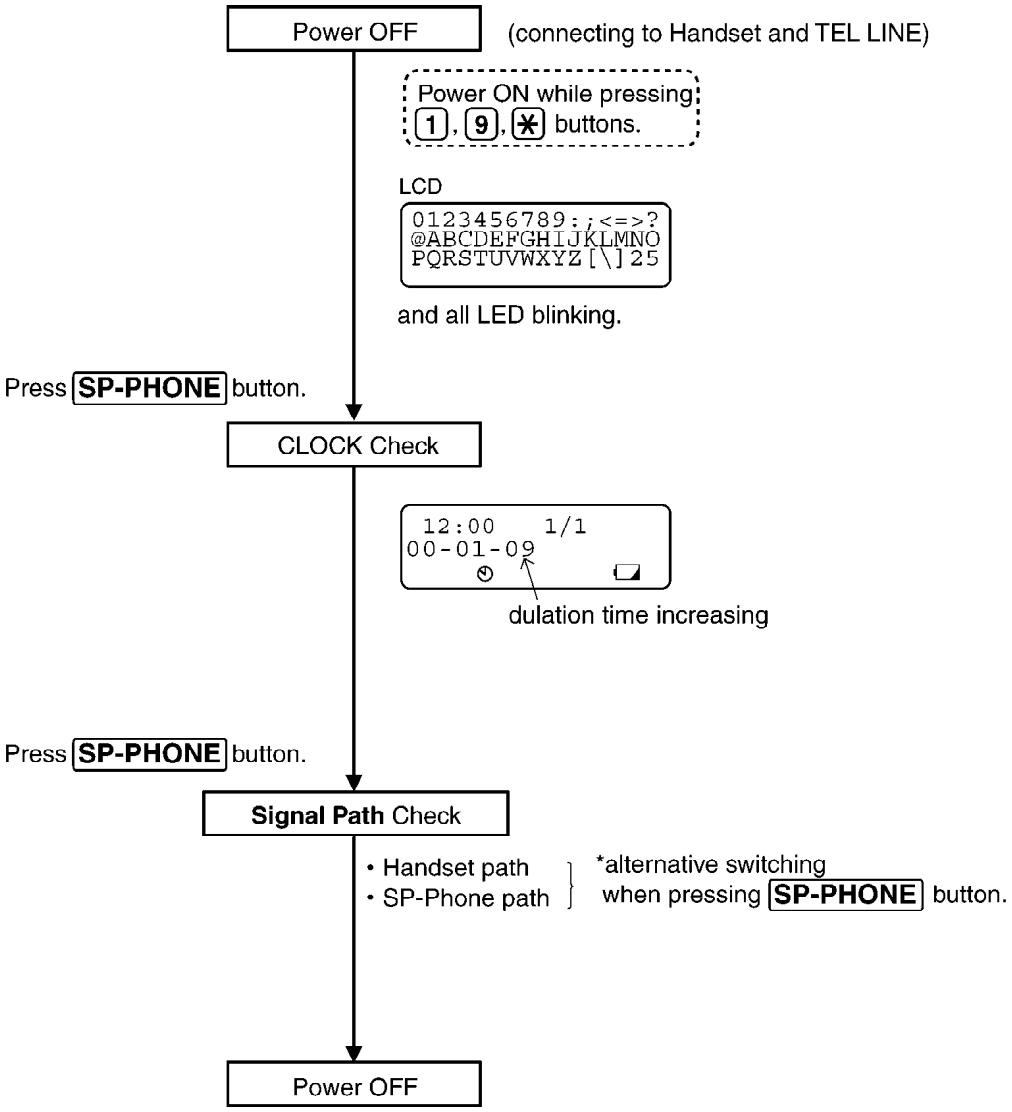



## 7.12. No Caller ID Display


Is there a Caller-ID signal at pin 17 of IC101 (IC201)?
NO
Check C110 (C210), C111 (C211) R110 (R210), R121 (R221) R111 (R211), R112 (R221) R119 (R219).
YES
Is there a caller-ID signal at pin13 (pin 12) of IC503?
NO
Check C551 (C552), R551 (R552).
YES
Is there a Caller-ID signal at pin 15 of IC503?
NO
Check IC503.
YES
Is there a caller-ID signal at pin 3 of IC502?
NO
Check C553, R553, R554, C565.
YES
Is there a data signal at pin 16, pin 17 of IC502?
NO
Check X550, C556, C557, R560.
YES
Check IC801.

# 8. TEST MODE

## 8.1. Test Mode Flow Chart




**Signal Pass:**
**Refer to SIGNAL ROUTE ().**

# 9. BLOCK DIAGRAM

# 10. CIRCUIT OPERATIONS

## 10.1. Telephone Line Interface

**Circuit Operation: ( )...Line 2**
**This unit is connected to the telephone circuit by a 6-core full modular jack. When L1 (L2) key is pressed, the speakerphone goes ON automatically, obtaining Line 1 (Line 2). An available line is also selected and obtained by simply putting the handset into an OFF-HOOK status. Surge absorbers SA1, SA2 are for surge suppression. The impedance of the unit is matched to each Line by the circuit in the vicinity of Q5.**
**When Hook Switch is turned ON (OFF-HOOK), pin 72 of IC801 detects OFF-HOOK, pin 68 (pin**

**66) becomes Low according to selected L1 (or L2), and Q130, Q131 (Q230, Q231) turned on and the Line Switch for that line (Line 1, Line 2) closes.**
**Line current flows through Q130. As a result, a loop is formed through D101 (D201) → Emitter of Q130 (Q230) → Collector of Q130 (Q230) → D131 (D231) → L101 → R154 → Collector of Q155 → Emitter of Q155 → R163 → D152 → Collector of Q131 (Q231) → Emitter of Q131 (Q231) → D130 (D230) → D101 (D201).**
**During a conference, the line current is the sum of the currents in the two lines.**
**If the line current exceeds 60 mA, the voltage across R154 increases, turning Q153 ON. As a result, current is supplied from Q153 Collector → R157 → R158 → base of Q154, turning Q154 ON. Consequently, current flows through R156, preventing the DC resistance of the unit from rising.**

## 10.2. Reset Circuit

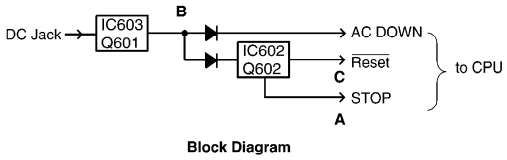
**Function:**
**The reset circuit is a detection circuit which is used to detect the power supply voltage and apply a reset to the microprocessor when the circuit changes from an ON-HOOK status to an OFF-HOOK status.**

**Circuit Operation:**
**The reset conditions are as follows:**

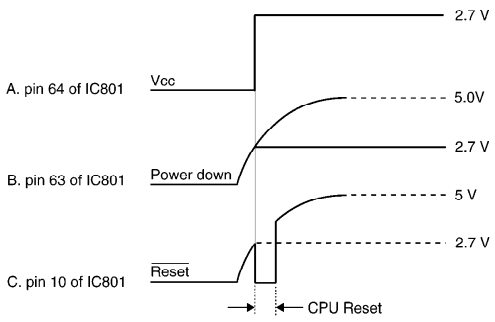
### 1. When AC Adaptor into outlet.

### 2. When the power given out;
### a) ON-HOOK → OFF-HOOK

**In the case of one of above conditions, a reset signal will be sent to the microprocessor IC801.**



Block Diagram




## 10.3. Tone Dial Circuit

**Function:**
**The tone dialing circuit consists of a DTMF (Dual Tone Multi Frequency) signal generator (outputted from) for tone dialing, and also a circuit for outputting the signal to line.**
**The DTMF circuit indentifies inputs from the 12 keys (1, 2, 3, 4, 5, 6, 7, 8, 9, 0, ✱ and #) by means of a total of seven frequencies, that is four low frequencies (Low group) and three high frequencies (High group).**

**Signal Pass:**
**Refer to SIGNAL ROUTE ().**

**The signal combination and frequency corresponding to each dial key are shown below.**

**Tone Frequencies**

| High Group / Low Group | H1 | H2 | H3 |
|---|---|---|---|
| L1 | 1 | 2 | 3 |
| L2 | 4 | 5 | 6 |
| L3 | 7 | 8 | 9 |
| L4 | ✱ | 0 | # |

| Low Group | Frequencies | High Group | Frequencies |
|---|---|---|---|
| L1 | 697 Hz ± 10 Hz | H1 | 1209 Hz ± 18 Hz |
| L2 | 770 Hz ± 12 Hz | H2 | 1336 Hz ± 20 Hz |
| L3 | 852 Hz ± 13 Hz | H3 | 1477 Hz ± 22 Hz |
| L4 | 941 Hz ± 14 Hz | | |

## 10.4. Pulse Dial Circuit

**Circuit Operation: ( )...Line 2**
**The dial pulses are generated by the CPU IC801, and reach the Telephone Line via the following path;**
**pin 68 (pin 66) of IC801 → PC8 (PC7) → Q130 and Q131 (Q230 and Q231) → D131 and D130 (D231 and D230) →**
**Telephone Line**

## 10.5. Speakerphone Circuit

**Function:**
**The circuit controls the automatic switching of the transmitted and received signals, to and from the telephone line, when the unit is used in the hands -free mode.**

**Circuit Operation:**
**The speakerphone can only provide a one-way communication path.**
**In other words, it can either transmit an outgoing signal or receive an incoming signal at a given time, but cannot do both simultaneously. Therefore, a switching circuit is necessary to control the flow of the outgoing and incoming signals.**
**This switching circuit is contained in IC401 and consists of a Voice Detector, TX Attenuator, RX Attenuator, Comparator and Attenuator Control. The circuit analyzes whether the TX(transmit)**

**or the RX(receive) signal is louder, and then it processed the signals such that the louder signal is given precedence.**
**The Voice Detector provides a DC input to the Attenuator Control corresponding to the TX signal.**
**The Comparator receives a TX and a RX signal, and supplies a DC input to the Attenuator Control corresponding to the RX signal.**
**The Attenuator Control provides a control signal to the TX and the RX attenuator to switch the appropriate signals on and off. The Attenuator Control also detects the level of the volume control to automatically adjust for changing ambient conditions.**

1. **Transmission/Reception signal path:**
   **Refer to SP-PHONE TX/RX in SIGNAL ROUTE ().**
2. **Transmission/Reception switching**
   **The comparison result between TX and RX outputs as a DC level of pin 25 of IC401.TX level is high ..... pin 26 = pin 22 - 6mV RX level is high ..... pin 25 = pin 21 - 150mVComparator output is connected to the attenuator control inside of IC601.**
3. **Voice detector**
   **The output of the mic amp (pin 10 of IC401) is supplied to pin 14 of IC401 as a control signal for the voice detector.**
4. **Attenuator control**
   **The attenuator control detects the setting of the volume control through pin 23 of IC401 to automatically adjust for changing ambient conditions.**

## 10.6. Bell Detection Circuit and Bell Generation Circuit

**Circuit Operation: ( )...Line 2**
**When the bell signal is received from the line, it passes through C101 (C201) and R102 (R202), turning PC5 (PC6) ON. As a result, pin 1 (pin 80) of IC801 becomes Low level. In this way, a ringer tone which corresponds to each line is generated from**
**pin 25 of IC801.**
**This tone passes through the following path: pin 25 of IC801 → R432 → C446 → R441 → C433 → R438 → R466 → C467 → pin 20 of IC401 → pin 16 of IC401 → C469 → Speaker,**
**the generated signal causing the tone ringer to produce a ringing tone.**

## 10.7. Hold Circuit

**Function:**
**This circuit is designed to hold a line which is IN USE in the handset mode or speakerphone mode. In this case, the LED indication will change from a steady glow to a flashing indication.**
**Circuit Operation: ( )...Line 2**

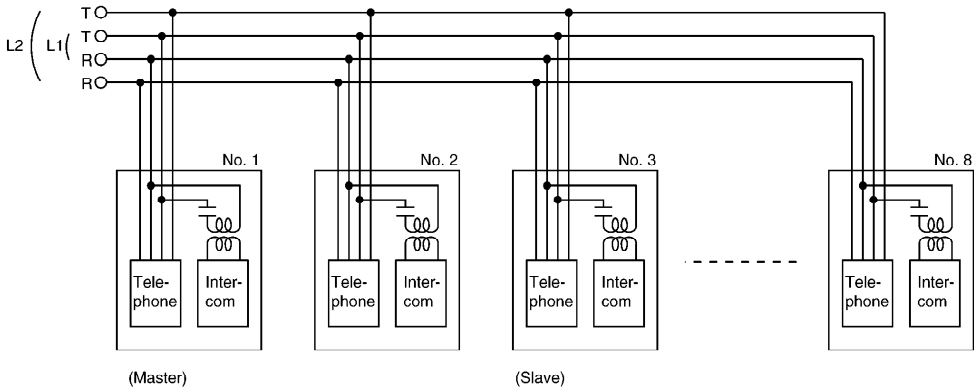
**(Holding)**
**If the Hold key is pressed during a conversation using the handset or the speakerphone, the CPU IC801 judges that a hold status has been applied, consequently pin 67 (pin 65) of IC801 becomes High level, and PC4 (PC3) goes ON.**
**Q132 and Q133 (Q232 and Q233) goes ON, and Q134 (Q234) goes ON, and the line voltage is held.**
**(Hold Cancellation)**
**If parellel-connected KX-TS3282 is put into an OFF-HOOK status during a hold status. When the signal indicating that the KX-TS3282 connected in parallel is in off-hook condition causing the hold status to be canceled.**
**At this time, LED goes out.**

## 10.8. Intercom

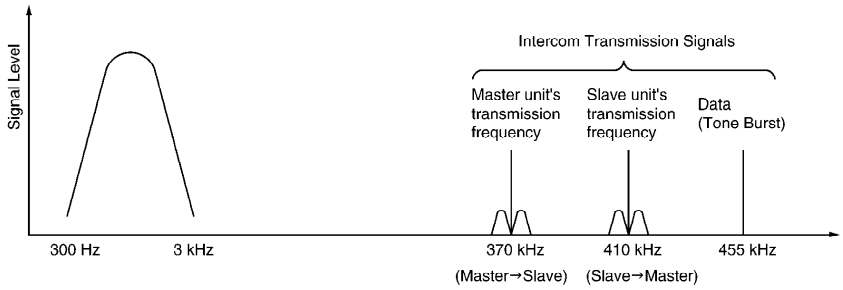
### 10.8.1. Principle of Operation of two-line Intercom

**As shown above, one (Line 1) of the two telephone lines is also used as the intercom line, and the data signals consisting of**
**the FM-modulated audio signal and the tone burst signals are transmitted to the line.**
**There is no distinction among 8 sets when using them as the master unit or the slave unit. If a set is used to call the other party,**
**for example,**
**No.1 call to No.3 , then No.1 become “Master”.**
**No.3 become “Slave”.**
**The Master unit use 370 kHz for transmission to Slave unit, and the Slave unit use 440 kHz for transmission.**
**In the idle mode when all units are waiting, each unit is used Data (455 kHz) for checking a status. In short, it is for watching the other units, for example busy mode or intercome mode etc.**

① Connection Diagram



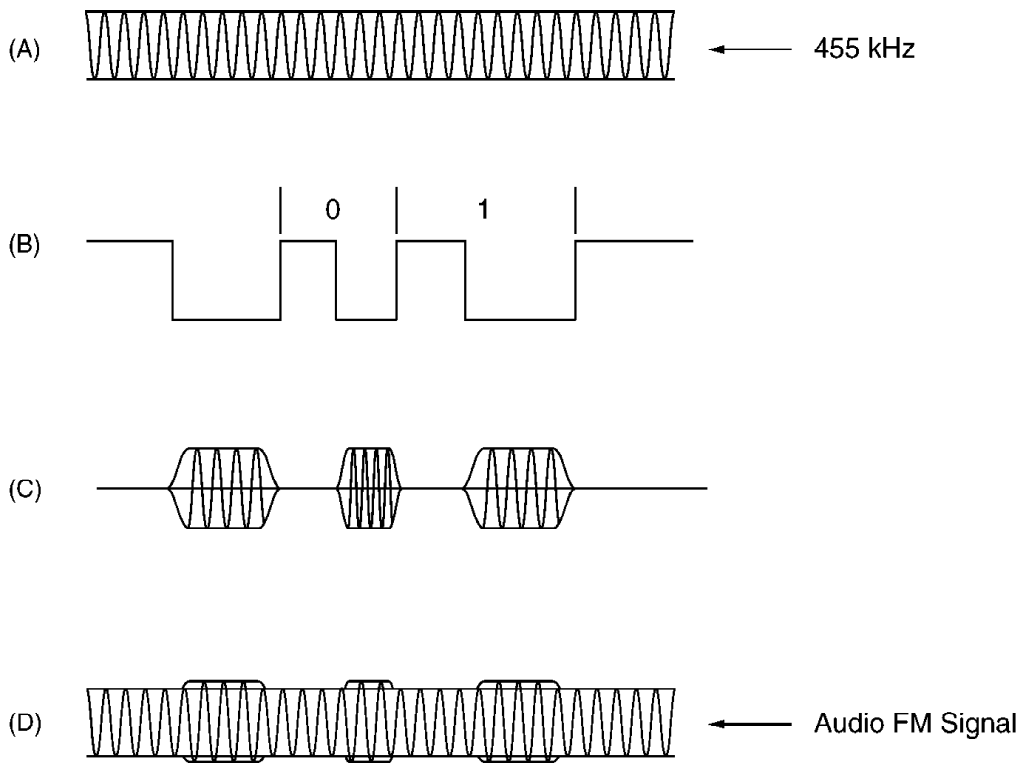

② Frequency Zone




## 10.8.2. Data Communication Block

### 1. Data Transmission

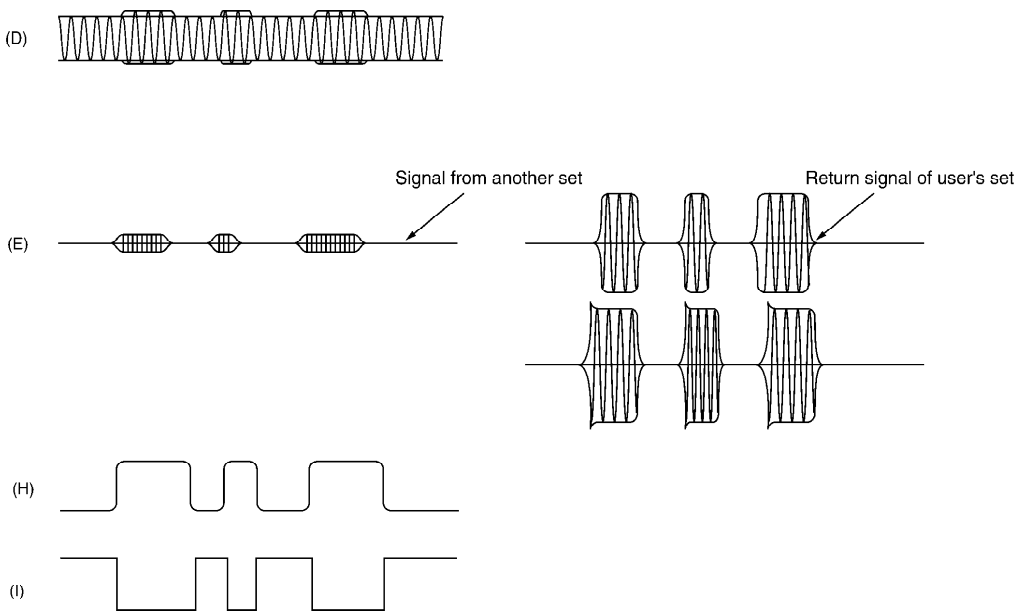
**The oscillated waveform of 455 kHz (A) at pin 10 of IC701 becomes the tone burst signal (C) at pin 12 of IC701 by the data signal (B) from pin 31 of the microcomputer IC801. And then it passes the amplifier mixed with the audio FM signal and is transmitted to**
**the telephone line via the transformer (T701).**



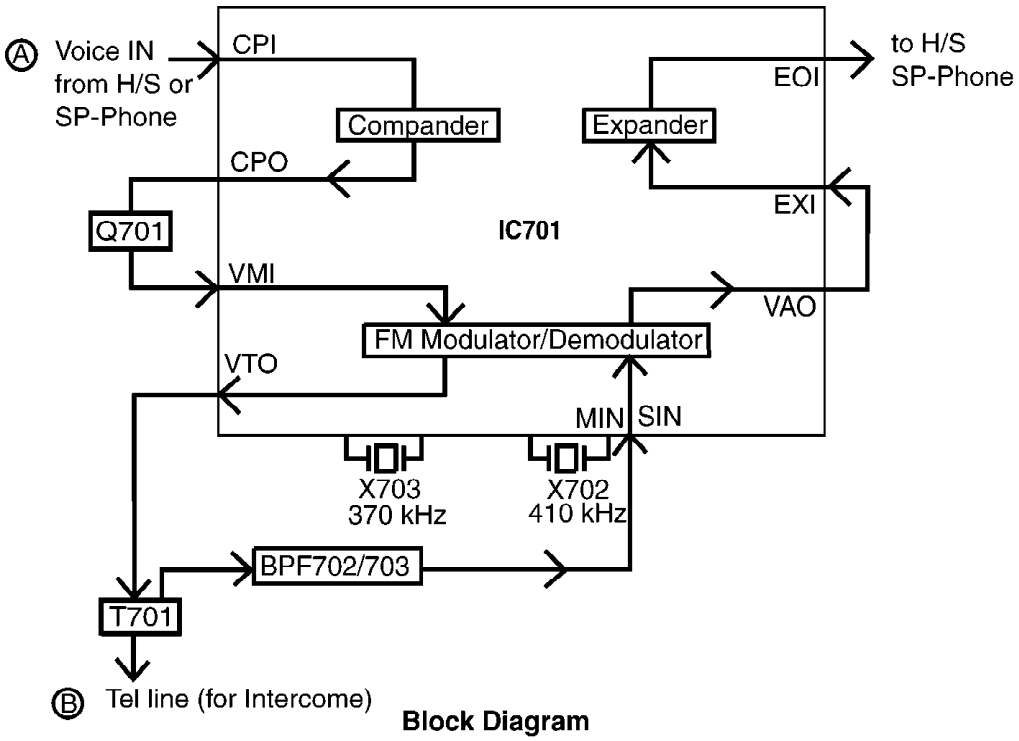

***When an intercom transmission is not in use, the waveform of (D) becomes the same burst signal as (C).**

**2. Data Reception**

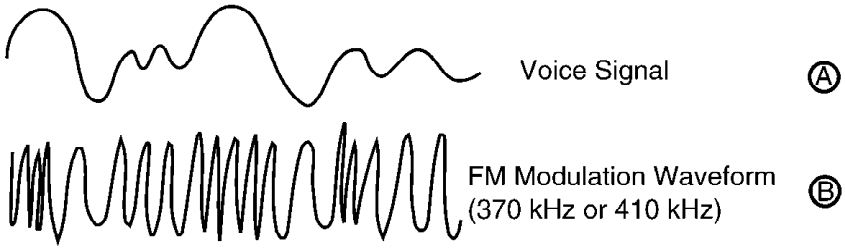
**The data that is transmitted to the telephone line from another set is input via T701 in reverse order of the data transmission (D). This burst signal passes BPF701 to separate from the audio signal and then only 455 kHz is extracted (E) at pin 5 of IC701. This burst signal is amplified and demodulated at pin 4 of IC701 (I). The amplified burst signal (J) is input to pin 32 of the microcomputer IC801.**




## 10.8.3. Voice Communication Block




**Block Diagram**



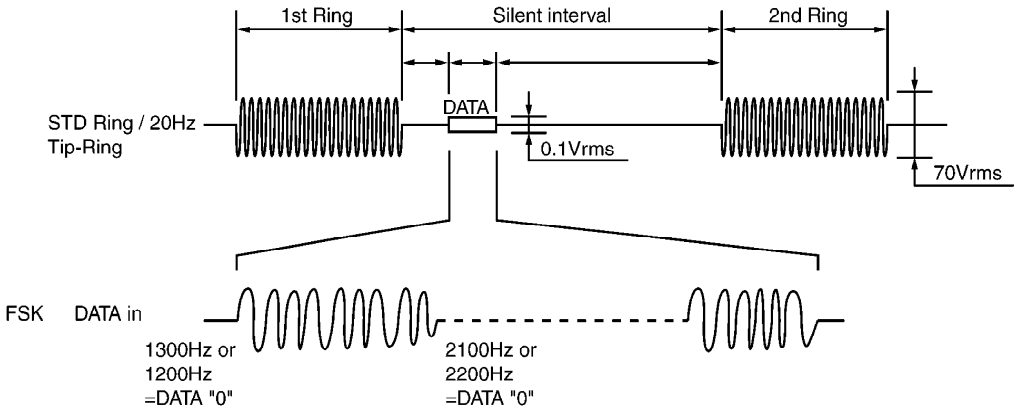

**1) Voice Transmission**

**The transmitting signal from the H/S or SP-phone is input to CPI (the expander is used to reduce a noise generated by the transmission system, a cross talk of line transmission, pulse sound, or ring signal, etc.) and then output from CPO after compression according to the signal level.**
**The audio signal compressed by the compander is amplified by Q701 and input to VMI for FM modulation/demodulation and output VTO after the FM modulation. At this time, the regulation of transmitting frequency is made by X702 or X703.**
**The XA is switched by Internal depending on whether the set is a master unit or a slave unit. The switching signal is controlled by Q1 (Master: H, Slave: L).**
**The output frequency of 15 is 370 kHz (by X703) when a master unit is used or to 410 kHz (by X702) when a**
**Slave unit is used.**
**The FM-modulated audio signal switches on and off the signal output from OE. The transmission signal is not sent to the line until an intercom transmission starts. This is controlled by Q2 (H: Voice transmission, L: Prohibition of transmission).**
**The transmission signal from VTO passes the amplifier mixed with the data signal and then is transmitted to the telephone line via the transformer (T701).**
**2) Voice Reception**
**The data that is transmitted to the telephone line from another set is input via T701 in reverse order of the transmission.**
**This signal passes BPF to separate the user's transmission signal from another set's signal and to extract the audio signal of another's set. If the user's set is a master unit, the BPF702 (BPF703) is selected since the carried signal of 410 kHz (370 kHz) is sent from another set.**
**The receiving signal from another set is input to SIN (MIN) of IC701 to execute FM demodulation. The demodulated audio signal is output from VAO and input to EXI of the expander for expansion in contrast with the voice transmission. This signal is output from EOI as the audio signal and becomes the receiving voice to H/S or SP-phone circuit.**

## 10.9. Calling Line Identification Circuit (Caller ID)

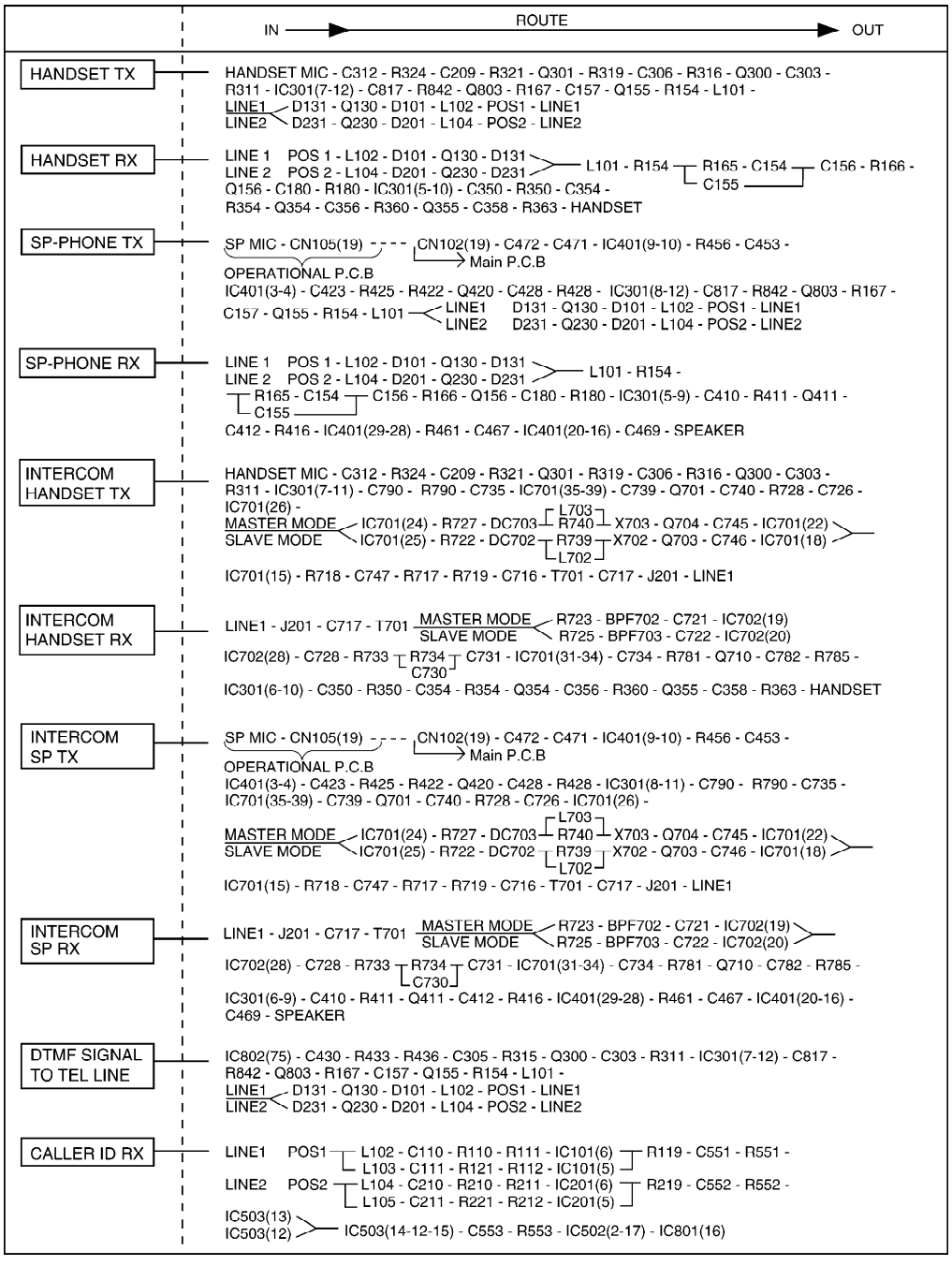
**Function:**
**The caller ID is a chargeable ID which the user of a telephone circuit obtains by entering a contract with the telephone company to utilize a caller ID service. For this reason, the operation of this circuit assumes that a caller ID service contract has been entered for the circuit being used.**
**The Caller-ID data from exchange is supplied to the telephone using either method of FSK. The method is chosen according to the exchange of telephone office. This unit is available to receive the data with both methods and displays the received data on LCD.**

## - FSK (Frequency Shift Keying) format




**Signal Pass:**
**Refer to SIGNAL ROUTE ().**

# 11. SIGNAL ROUTE



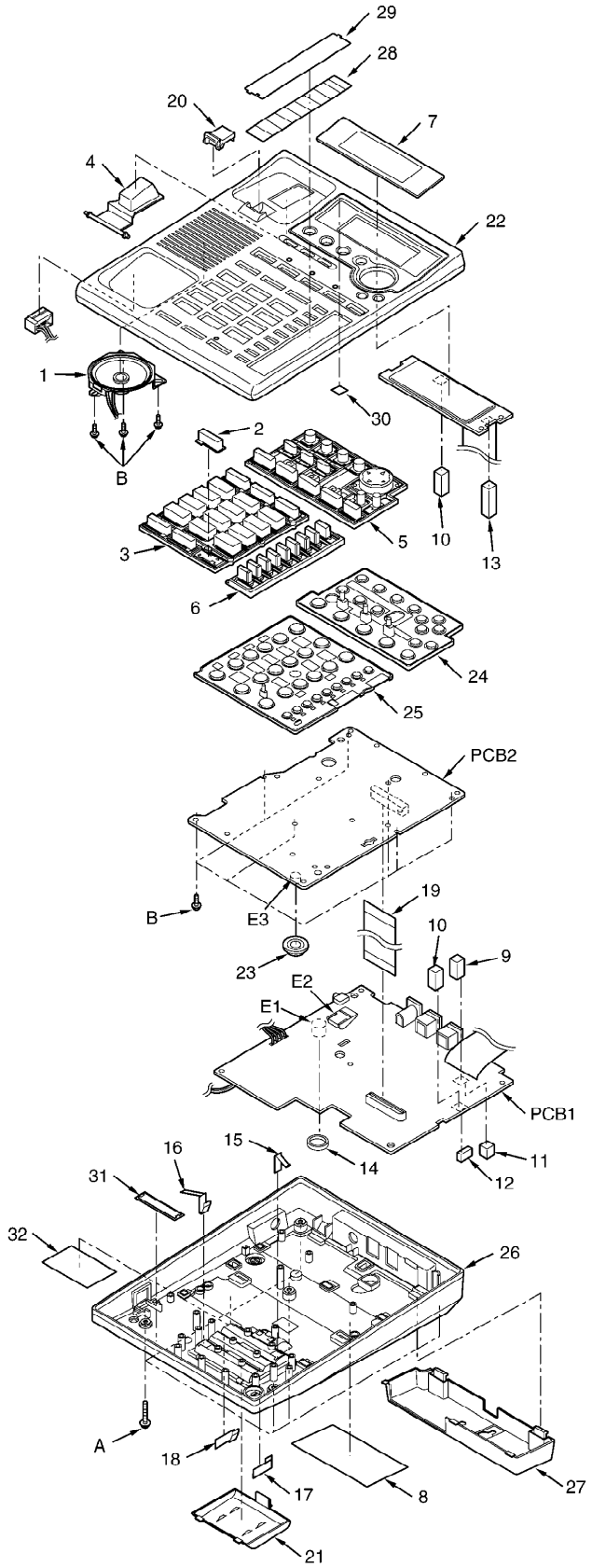

# 12. CPU DATA

## 12.1. IC801

| Pin | Description | I/O | High | Hi-z | Low |
|---|---|---|---|---|---|
| 1 | L1_BELLIN | D.I | Normal | | Bell |
| 2 | AVss | - | | | |
| 3 | X1 | - | Active | - | Active |
| 4 | X2 | - | Active | - | Active |
| 5 | Vss | - | - | - | Fix |
| 6 | OSC2 | - | Active | - | Active |
| 7 | OSC1 | - | Active | - | Active |
| 8 | TEST | - | - | - | Fix |
| 9 | Vcc | - | Fix | | - |
| 10 | RESET | - | Normal | - | Reset |
| 11 | MODEM_FSKEN | D.O | Active | - | Non Active |
| 12 | CLOCK1 | D.O | Active | - | Active |
| 13 | Serial In | D.I | Active | - | Active |
| 14 | Serial Out | D.O | Active | - | Active |
| 15 | MODEM_CLOCK | D.I | Active | - | Active |
| 16 | MODEM_DATA | D.I | Active | - | Active |
| 17 | MODEM_STD | D.I | CAS | - | Normal |
| 18 | MODEM_DR | D.I | Normal | - | Active |
| 19 | EEPROM_CS | D.O | Non Active | - | Active |
| 20 | EXIO1_CS | D.O | Change | - | Latch |
| 21 | EXIO2_CS | D.O | Change | - | Latch |
| 22 | CID_LINESW | D.O | LINE1 | - | LINE2 |
| 23 | CAS/FSK_CTRL | D.O | Call wait | - | Normal CID |
| 24 | DTMF_SW | D.O | L1 or L2 | - | L1/L2 |
| 25 | BEEP/RINGER | D.O | Active | - | Active |
| 26 | XSW_CS | D.O | Change | - | Latch |
| 27 | Vss | - | - | - | Fix |
| 28 | Vcc | - | Fix | - | - |
| 29 | CSS_DET_L1 | D.I | Normal | - | Signal input |
| 30 | CSS_DET_L2 | D.I | Normal | - | Signal input |
| 31 | ICM_TXDATA | D.O | Active | - | Active |
| 32 | ICM_RXDATA | D.I | Active | - | Active |
| 33 | LCD_D4 | D.I/O | Active | - | Active |
| 34 | LCD_D5 | D.I/O | Active | - | Active |
| 35 | LCD_D6 | D.I/O | Active | - | Active |
| 36 | LCD_D7 | D.I/O | Active | - | Active |
| 37 | LCD_E | D.O | Active | - | Active/Normal |
| 38 | LCD_CS | D.O | Non Active | - | Active |
| 39 | LCD_DC | D.O | Data | - | Command |
| 40 | LCD_R/W | D.O | Read | - | Write |

| Pin | Description | I/O | High | Hi-z | Low |
|---|---|---|---|---|---|
| 41 | LCD_RESET | D.O | Normal | - | Reset |
| 42 | DTMF_CLOCK | D.O | Active | - | Active/Normal |
| 43 | DTMF_STD | D.I | DTMF input | - | Normal |
| 44 | DTMF_SD | D.I | DTMF data/Normal | - | DTMF data |
| 45 | DTMF_LOAD/ PULSE_MUTE | D.O | Normal Mute | - | Active UnMute |
| 46 | MORASI_MUTE | D.O | MUTE | - | UNMUTE |
| 47 | TX_MUTE | D.O | MUTE | - | UNMUTE |
| 48 | RX_MUTE | D.O | MUTE | - | UNMUTE |
| 49 | KEY_IN1 | D.I | - | Normal | Key_In |
| 50 | KEY_IN2 | D.I | - | Normal | Key_In |
| 51 | KEY_IN3 | D.I | - | Normal | Key_In |
| 52 | KEY_IN4 | D.I | - | Normal | Key_In |
| 53 | KEY_IN5 | D.I | - | Normal | Key_In |
| 54 | KEY_IN6 | D.I | - | Normal | Key_In |
| 55 | KEY_IN7 | D.I | - | Normal | Key_In |
| 56 | KEY_IN8 | D.I | - | Normal | Key_In |
| 57 | STROB1 | D.O | - | Normal | Active |
| 58 | STROB2 | D.O | - | Normal | Active |
| 59 | STROB3 | D.O | - | Normal | Active |
| 60 | STROB4 | D.O | - | Normal | Active |
| 61 | STROB5 | D.O | - | Normal | Active |
| 62 | TEST_MODE | D.I | Normal | - | TEST |
| 63 | AC_DOWN | D.I | Normal | - | AC_DOWN |
| 64 | STOP | D.I | Normal | - | STOP |
| 65 | L2HOLD_RLY | D.O | OFF | - | ON |
| 66 | L2_RLY | D.O | OFF | - | ON |
| 67 | L1HOLD_RLY | D.O | OFF | - | ON |
| 68 | L1_RLY | D.O | OFF | - | ON |
| 69 | SP_CS | D.O | OFF | - | ON |
| 70 | TONE_IN | D.I | Normal | - | TONE |
| 71 | HEADSET_DET | D.I | HeadSet_ON | - | HeadSet_OFF |
| 72 | HOOK_DET | D.I | ON_HOOK | - | OFF_HOOK |
| 73 | BATTLOW_DET | D.I | Normal | - | Batt_Low |
| 74 | NC | D.O | - | - | Fix |
| 75 | DTMF_OUT | D.O | Active | - | Active |
| 76 | Vtref | - | - | - | - |
| 77 | Avcc | - | - | - | - |
| 78 | L2_EXHOOK | D.I | ON->OFF HOOK | - | Normal |
| 79 | L1_EXHOOK | D.I | ON->OFF HOOK | - | Normal |
| 80 | L2_BELLIN | D.I | Normal | - | Bell |

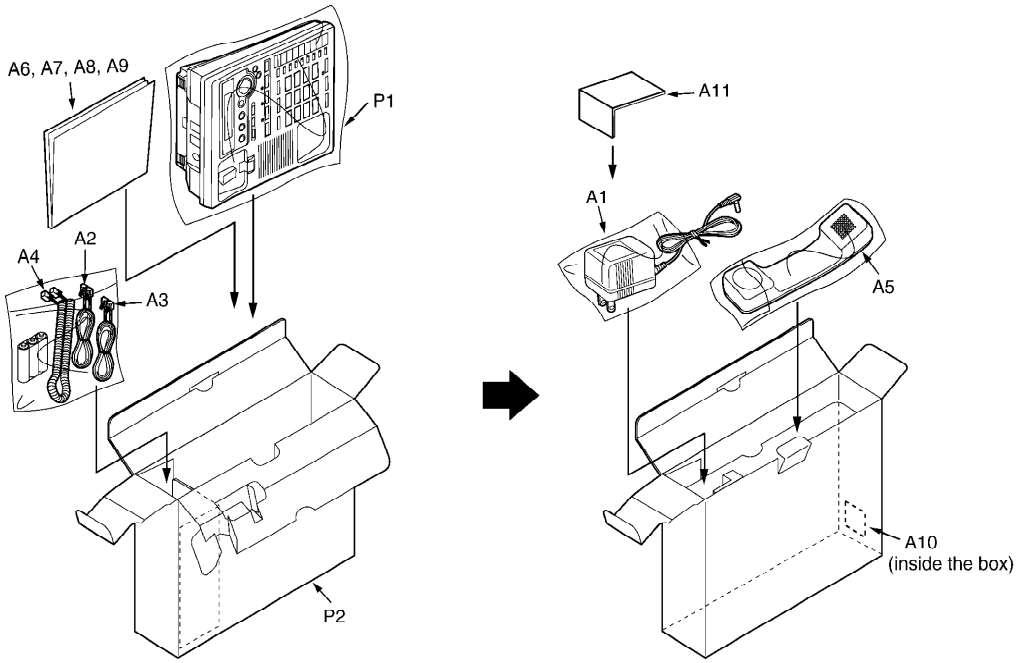
# 13. CABINET AND ELECTRICAL PARTS LOCATION




**Actual Size of Screws**

| | | |
|---|---|---|
| A | XTW26+12P | |
| B | XTW26+8P | |

# 14. ACCESSORIES AND PACKING MATERIALS




# 15. HOW TO REPLACE FLAT PACKAGE IC

## 15.1. Preparation

**- SOLDER**

**Sparkle Solder 115A-1, 115B-1 or Almit Solder KR-19, KR-19RMA**

**- Soldering iron**

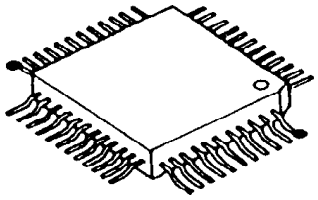
**Recommended power consumption will be between 30 W to 40 W.**
**Temperature of Copper Rod 662 ± 50°F (350 ± 10°C)**
**(An expert may handle between 60 ~ 80 W iron, but beginner might damage foil by overheating.)**

**- Flux**

**HI115 Specific gravity 0.863**
**(Original flux will be replaced daily.)**

## 15.2. Procedure

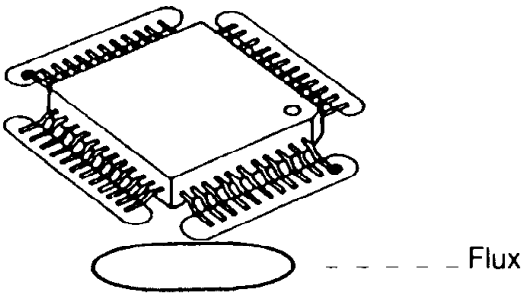
**1. Tack the flat pack IC to the PCB by temporarily soldering two diagonally opposite pins in the correct positions on the PCB.**



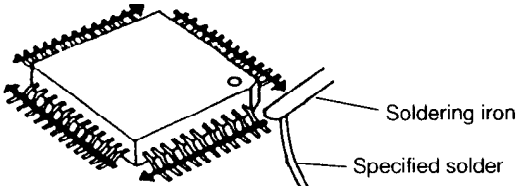
● – – – – – –Temporary soldering point.

**Be certain each pin is located over the correct pad on the PCB.**

2. Apply flux to all of the pins on the IC.

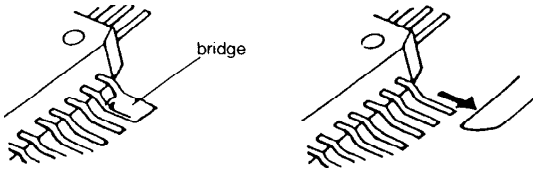



3. Being careful to not unsolder the tack points, slide the soldering iron along the tips of the pins while feeding enough solder to the tip so that it flows under the pins as they are heated.

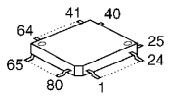
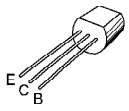
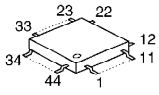
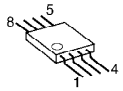
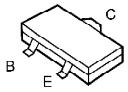
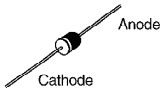
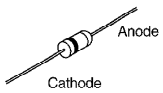
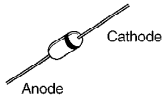
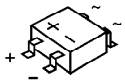
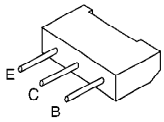
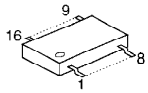
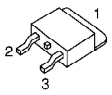
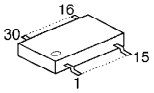
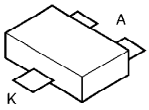
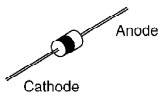
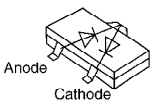
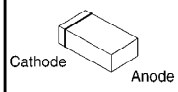
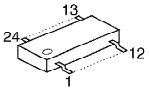
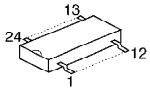
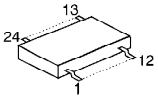
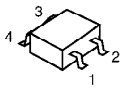
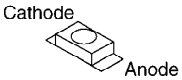
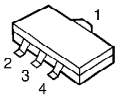
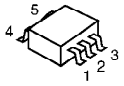



### 15.3. Modification Procedure of Bridge

1. Add a small amount of solder to the bridged pins.
2. With a hot iron, use a sweeping motion along the flat part of the pin to draw the solder from between the adjacent pads.




# 16. TERMINAL GUIDE OF THE ICs, TRANSISTORS AND DIODES

| | | | | |
|---|---|---|---|---|
|  C2CBGF000152 |  2SC2120, 2SA1625 2SC2235, 2SA1576S |  PQVIXLA8231K |  PQVINJM2904F PQWITS3282WH |  UN5213, 2SD1819A PQVTDTC144TU PQVTFB1J3P, UN5113 PQVTD143Z106 |
|  1SS119 |  MA4062, MA4180 |  PQVDMZJ5R1C MA723 |  PQVDS1ZB60F1 |  2SC4645EAN |
|  PQVIMC4094BF PQVITC4053BF PQVIBU8244F |  PQVIBA78M08F |  PQVISC77655V |  PQVDKV15602 |  PQVD1T4R1T |
|  MA153 |  MA111 |  C0HBZ0000038 |  PQVIMT8843AS |  C0JBAZ000788 |
|  PQVIPS3327UT |  PSVD1SRCT |  PQVIXCF3002P |  PQVIPS3238NT | |

# 17. REPLACEMENT PARTS LIST

**Note:**

**1. RTL (Retention Time Limited)**

**Note : The marking (RTL) indicates that the Retention Time is limited for this item.**

**After the discontinuation of this assembly in production, the item will continue to be available for a specific period of time. The retention period of availability is depends on the type of assembly, and in accordance with the laws governing parts and product retention.**

**After end of this period, the assembly will no longer be available.**

**2. Important safety notice**

**Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacture's specified parts.**

3. The S mark means the part is one of some identical parts. For that reason, it may be different from the installed part.

4. ISO code (Example: ABS-94HB) of the remarks column shows quality of the material and a flame resisting grade about plastics.

5. RESISTORS & CAPACITORS
   Unless otherwise specified;
   All resistors are in ohms ( Ω ) K=1000 Ω , M=1000k Ω
   All capacitors are in MICRO FARADS ( μ F) P= μ μ F
   *Type & Wattage of Resistor

Type

| | | |
|---|---|---|
| ERC:Solid<br>ERD:Carbon<br>PQRD:Carbon | ERX:Metal Film<br>ERG:Metal Oxide<br>ER0:Metal Film | PQ4R:Carbon<br>ERS:Fusible Resistor<br>ERF:Cement Resistor |

Wattage

| | | | | | |
|---|---|---|---|---|---|
| 10,16:1/8W | 14,25:1/4W | 12:1/2W | 1:1W | 2:2W | 3:3W |

*Type & Voltage of Capacitor

Type

| | |
|---|---|
| ECFD:Semi-Conductor<br>ECQS:Styrol<br>PQCUV:Chip<br>ECQMS:Mica | ECCD,ECKD,ECBT,PQCBC : Ceramic<br>ECQE,ECQV,ECQG : Polyester<br>ECEA,ECSZ : Electrolytic<br>ECQP : Polypropylene |

Voltage

| ECQ Type | ECQG<br>ECQV Type | ECSZ Type | Others | |
|---|---|---|---|---|
| 1H: 50V<br>2A:100V<br>2E:250V<br>2H:500V | 05: 50V<br>1:100V<br>2:200V | 0F:3.15V<br>1A:10V<br>1V:35V<br>0J:6.3V | 0J :6.3V<br>1A :10V<br>1C :16V<br>1E,25:25V | 1V :35V<br>50,1H:50V<br>1J :63V<br>2A :100V |

## 17.1. Unit

### 17.1.1. Cabinet and Electrical Parts

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 1 | PQAS57P03Z | SPEAKER | |
| 2 | PQBC10374Z1 | BUTTON, SP-PHONE KEY | ABS-HB |
| 3 | PQBX10366Z1 | BUTTON, 17KEY | ABS-HB |
| 4 | PQBH10039Z1 | BUTTON, HOOK | ABS-HB |
| 5 | PQBX10365Z1 | BUTTON, 15KEY | ABS-HB |
| 6 | PQBX10367Z1 | BUTTON, 9KEY | ABS-HB |
| 7 | PQGP10224Z1 | PANEL, LCD | PC-HB |
| 8 | PQGT15541Z | NAME PLATE | |
| 9 | PQHG10669Z | RUBBER PARTS, SPACER | |
| 10 | PQHG10670Z | RUBBER PARTS, SPACER | |
| 11 | PQHG10671Z | RUBBER PARTS, SPACER | |
| 12 | PQHG10668Z | RUBBER PARTS, SPACER | |
| 13 | PQHG10673Z | RUBBER PARTS, SPACER | |
| 14 | PQHG10674Z | RUBBER PARTS, SPACER | |
| 15 | PQJC10044Z | BATTERY TERMINAL (+) | |
| 16 | PQJC10045Z | BATTERY TERMINAL (-) | |
| 17 | PQJC313Z | BATTERY TERMINAL (+)(-) | |
| 18 | PQJC314Z | BATTERY TERMINAL (-)(+) | |
| 19 | PQJE10091Z | LEAD WIRE, FFC | |
| 20 | PQKE10070Z3 | GUIDE, H/S | ABS-HB |
| 21 | PQKK10105Y4 | RLID, BATTERY | ABS-HB |
| 22 | PQKM10581Z1 | CABINET BODY, UPPER | PS-HB |
| 23 | PQMG10025Z | RUBBER PARTS, MICROPHONE COVER | |
| 24 | PQSX10222Z | KEYBOARD SWITCH, 15KEY | |
| 25 | PQSX10223Z | KEYBOARD SWITCH, 23KEY | |
| 26 | PQYF10559Z1 | CABINET COVER | PS-HB |
| 27 | PQYL10010Z1 | STAND, WALL MOUNT ADAPTOR | PS-HB |
| 28 | PQGD10166Z | CARD, TELEPHONE | |
| 29 | PQGV10043Z | TRANSPARENT PLATE, TEL COVER | PC-HB |
| 30 | PQHS10563Z | FELT PARTS, TAPE | |
| 31 | PQXDZLDRS1 | LABEL, SECURITY TAG | |
| 32 | PQQT22436Z | LABEL, FFC CAUTION | |

## 17.1.2. Main P.C. Board Parts

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PCB1 | PQWP1TS3282W | MAIN P.C.BOARD ASS'Y (RTL) | |
| | | (ICS) | |
| IC101 | PQVINJM2904F | IC | S |
| IC201 | PQVINJM2904F | IC | S |
| IC301 | PQVIBU8244F | IC | S |
| IC302 | PQVIMC4094BF | IC | S |
| IC304 | PQVIXCF3002P | IC | S |
| IC401 | PQVISC77655V | IC | S |
| IC502 | PQVIMT8843AS | IC | |
| IC503 | PQVITC4053BF | IC | S |
| IC601 | PQVIPS3238NT | IC | S |
| IC602 | PQVIPS3327UT | IC | |
| IC603 | PQVIBA78M08F | IC | S |
| IC701 | PQVIXLA8231K | IC | S |
| IC801 | C2CBGF000152 | IC | |
| IC802 | PQWITS3282WH | IC | |
| IC806 | C0JBAZ000788 | IC | |
| | | (TRANSISTORS) | |
| Q101 | 2SD1819A | TRANSISTOR(SI) | |
| Q102 | UN5213 | TRANSISTOR(SI) | S |
| Q130 | 2SA1625 | TRANSISTOR(SI) | S |
| Q131 | 2SC4645EAN | TRANSISTOR(SI) | S |
| Q132 | 2SA1625 | TRANSISTOR(SI) | S |
| Q133 | 2SC4645EAN | TRANSISTOR(SI) | S |
| Q134 | 2SC2120 | TRANSISTOR(SI) | S |
| Q135 | 2SD1819A | TRANSISTOR(SI) | |
| Q153 | 2SA1576S | TRANSISTOR(SI) | S |
| Q154 | 2SD1819A | TRANSISTOR(SI) | |
| Q155 | 2SC2120 | TRANSISTOR(SI) | S |
| Q156 | 2SD1819A | TRANSISTOR(SI) | |
| Q201 | 2SD1819A | TRANSISTOR(SI) | |
| Q230 | 2SA1625 | TRANSISTOR(SI) | S |
| Q231 | 2SC4645EAN | TRANSISTOR(SI) | S |
| Q232 | 2SA1625 | TRANSISTOR(SI) | S |
| Q233 | 2SC4645EAN | TRANSISTOR(SI) | S |
| Q234 | 2SC2120 | TRANSISTOR(SI) | S |
| Q235 | 2SD1819A | TRANSISTOR(SI) | |
| Q251 | UN5213 | TRANSISTOR(SI) | S |
| Q300 | 2SD1819A | TRANSISTOR(SI) | |
| Q301 | 2SD1819A | TRANSISTOR(SI) | |
| Q302 | PQVTFB1J3P | TRANSISTOR(SI) | S |
| Q303 | 2SD1819A | TRANSISTOR(SI) | |
| Q350 | PQVTD143Z106 | TRANSISTOR(SI) | S |
| Q351 | UN5213 | TRANSISTOR(SI) | S |
| Q352 | UN5213 | TRANSISTOR(SI) | S |
| Q353 | UN5213 | TRANSISTOR(SI) | S |
| Q354 | 2SD1819A | TRANSISTOR(SI) | |
| Q355 | 2SD1819A | TRANSISTOR(SI) | |
| Q356 | PQVTD143Z106 | TRANSISTOR(SI) | S |
| Q410 | PQVTD143Z106 | TRANSISTOR(SI) | S |
| Q411 | 2SD1819A | TRANSISTOR(SI) | |
| Q420 | 2SD1819A | TRANSISTOR(SI) | |
| Q430 | UN5213 | TRANSISTOR(SI) | S |
| Q431 | UN5213 | TRANSISTOR(SI) | S |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| Q432 | PQVTD143Z106 | TRANSISTOR(SI) | S |
| Q433 | PQVTD143Z106 | TRANSISTOR(SI) | S |
| Q434 | UN5113 | TRANSISTOR(SI) | S |
| Q450 | PQVTD143Z106 | TRANSISTOR(SI) | S |
| Q481 | 2SD1819A | TRANSISTOR(SI) | |
| Q482 | PQVTD143Z106 | TRANSISTOR(SI) | S |
| Q483 | PQVTD143Z106 | TRANSISTOR(SI) | S |
| Q601 | 2SC2235 | TRANSISTOR(SI) | S |
| Q602 | 2SD1819A | TRANSISTOR(SI) | |
| Q701 | 2SD1819A | TRANSISTOR(SI) | |
| Q702 | 2SD1819A | TRANSISTOR(SI) | |
| Q703 | 2SD1819A | TRANSISTOR(SI) | |
| Q704 | 2SD1819A | TRANSISTOR(SI) | |
| Q710 | 2SD1819A | TRANSISTOR(SI) | |
| Q802 | PQVTDTC144TU | TRANSISTOR(SI) | S |
| | | (DIODES) | |
| D101 | PQVDS1ZB60F1 | DIODE(SI) | S |
| D102 | MA153 | DIODE(SI) | |
| D103 | MA153 | DIODE(SI) | |
| D130 | PQVD1T4R1T | DIODE(SI) | |
| D131 | PQVD1T4R1T | DIODE(SI) | |
| D132 | PQVD1T4R1T | DIODE(SI) | |
| D133 | MA4062 | DIODE(SI) | |
| D134 | 1SS119 | DIODE(SI) | S |
| D150 | MA4180 | DIODE(SI) | |
| D152 | PQVDMZJ5R1C | DIODE(SI) | S |
| D153 | 1SS119 | DIODE(SI) | S |
| D156 | 1SS119 | DIODE(SI) | S |
| D201 | PQVDS1ZB60F1 | DIODE(SI) | S |
| D202 | MA153 | DIODE(SI) | |
| D203 | MA153 | DIODE(SI) | |
| D230 | PQVD1T4R1T | DIODE(SI) | |
| D231 | PQVD1T4R1T | DIODE(SI) | |
| D232 | PQVD1T4R1T | DIODE(SI) | |
| D233 | MA4062 | DIODE(SI) | |
| D234 | 1SS119 | DIODE(SI) | S |
| D251 | 1SS119 | DIODE(SI) | S |
| D361 | 1SS119 | DIODE(SI) | S |
| D362 | 1SS119 | DIODE(SI) | S |
| D401 | 1SS119 | DIODE(SI) | S |
| D402 | 1SS119 | DIODE(SI) | S |
| D452 | 1SS119 | DIODE(SI) | S |
| D485 | 1SS119 | DIODE(SI) | S |
| D550 | MA111 | DIODE(SI) | |
| D551 | MA111 | DIODE(SI) | |
| D601 | 1SS119 | DIODE(SI) | S |
| D602 | MA4062 | DIODE(SI) | |
| D604 | PQVD1T4R1T | DIODE(SI) | |
| D605 | MA723 | DIODE(SI) | |
| D612 | 1SS119 | DIODE(SI) | S |
| D613 | 1SS119 | DIODE(SI) | S |
| D801 | MA111 | DIODE(SI) | |
| DC702 | PQVDKV15602 | DIODE(SI) | |
| DC703 | PQVDKV15602 | DIODE(SI) | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | (CERAMIC FILTERS) | |
| BPF701 | J0B4553A0059 | CERAMIC FILTER | |
| BPF702 | J0B4103A0002 | CERAMIC FILTER | |
| BPF703 | J0B3703A0002 | CERAMIC FILTER | |
| X701 | PQVBB455E1 | CERAMIC FILTER | S |
| X702 | PQVBB410F | CERAMIC FILTER | S |
| X703 | PQVBB370F | CERAMIC FILTER | S |
| | | (COILS) | |
| L101 | ELEV101KA | COIL | |
| L102 | PQLQXF330K | COIL | S |
| L103 | PQLQXF330K | COIL | S |
| L104 | PQLQXF330K | COIL | S |
| L105 | PQLQXF330K | COIL | S |
| L702 | PQL07A6 | COIL | |
| L703 | PQL07A7 | COIL | |
| T701 | PQLE131 | COIL | |
| | | (CONNECTORS AND JACKS) | |
| CN102 | PQJS24X54Z | CONNECTOR, FFC | S |
| CN801 | L5DCAGC00001 | LIQUID CRYSTAL DISPLAY | |
| JJ2 | PQJJ1T008X | JACK, MODULAR | S |
| JJ3 | PQJJ1T023Y | JACK, MODULAR | S |
| JJ4 | PQJJ1T030Y | JACK, HANDSET | |
| JJ5 | PQJJ1C001Z | JACK, HEADSET | |
| JJ6 | PQJJ1B4Y | JACK, DC | |
| | | (CRYSTAL OSCILLATORS) | |
| X550 | PQVCK3581N9Z | CRYSTAL OSCILLATOR | S |
| X801 | PQVBCST80MG6 | CRYSTAL OSCILLATOR | S |
| X802 | PQVCL3276N6Z | CRYSTAL OSCILLATOR | S |
| | | (PHOTO ELECTRIC TRANSDUCERS) | |
| PC1 | PQVITLP521 | PHOTO COUPLER | |
| PC2 | PQVITLP521 | PHOTO COUPLER | |
| PC3 | PQVITLP627 | PHOTO COUPLER | S |
| PC4 | PQVITLP627 | PHOTO COUPLER | S |
| PC5 | 0N3181 | PHOTO COUPLER | |
| PC6 | 0N3181 | PHOTO COUPLER | |
| PC7 | PQVITLP627 | PHOTO COUPLER | S |
| PC8 | PQVITLP627 | PHOTO COUPLER | S |
| | | (THERMISTORS) | |
| POS1 | PQRPAR390N | THERMISTOR (POSISTOR) | S |
| POS2 | PQRPAR390N | THERMISTOR (POSISTOR) | S |
| | | (VARISTORS) | |
| SA1 | PQVDDSS301L | VARISTOR (SURGE ABSOBER) | S |
| SA2 | PQVDDSS301L | VARISTOR (SURGE ABSOBER) | S |
| SA3 | PQVDDSS301L | VARISTOR (SURGE ABSOBER) | S |
| SA4 | PQVDDSS301L | VARISTOR (SURGE ABSOBER) | S |
| | | (RESISTORS) | |
| R102 | PQ4R10XJ473 | 47K | S |
| R110 | PQ4R10XJ225 | 2.2M | S |
| R111 | ERJ3GEYJ823 | 82K | |
| R112 | ERJ3GEYJ823 | 82K | |
| R114 | ERJ3GEYJ153 | 15K | |
| R115 | ERJ3GEYJ103 | 10K | |
| R116 | ERJ3GEYJ563 | 56K | |
| R117 | ERJ3GEYJ474 | 470K | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R118 | ERJ3GEYJ562 | 5.6K | |
| R119 | ERJ3GEYJ275 | 2.7M | |
| R120 | ERJ3GEYJ563 | 56K | |
| R121 | PQ4R10XJ225 | 2.2M | S |
| R122 | ERJ3GEYJ684 | 680K | |
| R123 | ERJ3GEYJ104 | 100K | |
| R124 | ERJ3GEYJ103 | 10K | |
| R125 | ERJ3GEYJ680 | 68 | |
| R126 | ERJ3GEYJ272 | 2.7K | |
| R127 | ERJ3GEYJ333 | 33K | |
| R130 | ERJ3GEYJ104 | 100K | |
| R131 | ERJ3GEYJ102 | 1K | |
| R132 | PQ4R18XJ472 | 4.7K | S |
| R133 | PQ4R18XJ104 | 100K | S |
| R134 | ERJ3GEYJ104 | 100K | |
| R135 | ERJ3GEYJ102 | 1K | |
| R136 | PQ4R18XJ472 | 4.7K | S |
| R137 | PQ4R18XJ104 | 100K | S |
| R138 | PQ4R18XJ681 | 680 | S |
| R139 | ERJ3GEY0R00 | 0 | |
| R140 | ERJ3GEYJ273 | 27K | |
| R141 | ERJ3GEYJ272 | 2.7K | |
| R142 | ERJ3GEYJ104 | 100K | |
| R143 | ERJ3GEYJ152 | 1.5K | |
| R144 | ERJ3GEYJ682 | 6.8K | |
| R145 | ERJ3GEYJ223 | 22K | |
| R154 | PQ4R18XJ100 | 10 | S |
| R155 | ERJ3GEYJ101 | 100 | |
| R156 | ERDS1TJ101 | 100 | S |
| R157 | ERJ3GEYJ472 | 4.7K | |
| R158 | ERJ3GEYJ472 | 4.7K | |
| R159 | ERJ3GEYJ472 | 4.7K | |
| R160 | PQ4R10XJ102 | 1K | S |
| R161 | ERJ3GEYJ153 | 15K | |
| R163 | PQ4R18XJ150 | 15 | S |
| R164 | ERJ3GEYJ330 | 33 | |
| R165 | ERJ3GEYJ821 | 820 | |
| R166 | ERJ3GEYJ102 | 1K | |
| R167 | ERJ3GEYJ332 | 3.3K | |
| R168 | ERJ3GEYJ394 | 390K | |
| R169 | ERJ3GEYJ272 | 2.7K | |
| R170 | ERJ3GEYJ101 | 100 | |
| R171 | PQ4R18XJ100 | 10 | S |
| R172 | PQ4R10XJ100 | 10 | S |
| R175 | PQ4R10XJ102 | 1K | S |
| R180 | ERJ3GEYJ102 | 1K | |
| R202 | PQ4R10XJ473 | 47K | S |
| R210 | PQ4R10XJ225 | 2.2M | S |
| R211 | ERJ3GEYJ823 | 82K | |
| R212 | ERJ3GEYJ823 | 82K | |
| R214 | ERJ3GEYJ153 | 15K | |
| R215 | ERJ3GEYJ103 | 10K | |
| R216 | ERJ3GEYJ563 | 56K | |
| R217 | ERJ3GEYJ474 | 470K | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R218 | ERJ3GEYJ562 | 5.6K | |
| R219 | ERJ3GEYJ275 | 2.7M | |
| R220 | ERJ3GEYJ563 | 56K | |
| R221 | PQ4R10XJ225 | 2.2M | S |
| R222 | ERJ3GEYJ684 | 680K | |
| R223 | ERJ3GEYJ104 | 100K | |
| R224 | ERJ3GEYJ103 | 10K | |
| R225 | ERJ3GEYJ680 | 68 | |
| R226 | ERJ3GEYJ272 | 2.7K | |
| R227 | ERJ3GEYJ333 | 33K | |
| R230 | ERJ3GEYJ104 | 100K | |
| R231 | ERJ3GEYJ102 | 1K | |
| R232 | PQ4R18XJ472 | 4.7K | S |
| R233 | PQ4R18XJ104 | 100K | S |
| R234 | ERJ3GEYJ104 | 100K | |
| R235 | ERJ3GEYJ102 | 1K | |
| R236 | PQ4R18XJ472 | 4.7K | S |
| R237 | PQ4R18XJ104 | 100K | S |
| R238 | PQ4R18XJ681 | 680 | S |
| R239 | ERJ3GEY0R00 | 0 | |
| R240 | ERJ3GEYJ273 | 27K | |
| R241 | ERJ3GEYJ272 | 2.7K | |
| R242 | ERJ3GEYJ104 | 100K | |
| R243 | ERJ3GEYJ152 | 1.5K | |
| R244 | ERJ3GEYJ682 | 6.8K | |
| R245 | ERJ3GEYJ223 | 22K | |
| R259 | ERJ3GEYJ183 | 18K | |
| R300 | ERJ3GEYJ472 | 4.7K | |
| R301 | PQ4R18XJ100 | 10 | S |
| R310 | PQ4R18XJ100 | 10 | S |
| R311 | ERJ3GEYJ104 | 100K | |
| R312 | ERJ3GEYJ272 | 2.7K | |
| R313 | ERJ3GEYJ564 | 560K | |
| R314 | ERJ3GEYJ102 | 1K | |
| R315 | ERJ3GEYJ474 | 470K | |
| R316 | ERJ3GEYJ103 | 10K | |
| R317 | ERJ3GEYJ272 | 2.7K | |
| R318 | ERJ3GEYJ394 | 390K | |
| R319 | ERJ3GEYJ473 | 47K | |
| R320 | ERJ3GEYJ101 | 100 | |
| R321 | ERJ3GEYJ103 | 10K | |
| R322 | ERJ3GEYJ153 | 15K | |
| R323 | ERJ3GEYJ334 | 330K | |
| R324 | ERJ3GEYJ223 | 22K | |
| R325 | ERJ3GEYJ103 | 10K | |
| R326 | ERJ3GEYJ222 | 2.2K | |
| R327 | ERJ3GEYJ104 | 100K | |
| R328 | ERJ3GEYJ473 | 47K | |
| R329 | ERJ3GEYJ104 | 100K | |
| R350 | ERJ3GEYJ183 | 18K | |
| R351 | ERJ3GEYJ822 | 8.2K | |
| R352 | ERJ3GEYJ332 | 3.3K | |
| R353 | ERJ3GEYJ392 | 3.9K | |
| R354 | ERJ3GEYJ273 | 27K | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R355 | ERJ3GEYJ823 | 82K | |
| R356 | ERJ3GEYJ393 | 39K | |
| R357 | ERJ3GEYJ183 | 18K | |
| R358 | ERJ3GEYJ272 | 2.7K | |
| R359 | ERJ3GEYJ394 | 390K | |
| R360 | ERJ3GEYJ472 | 4.7K | |
| R361 | ERJ3GEYJ563 | 56K | |
| R362 | ERJ3GEYJ102 | 1K | |
| R363 | ERJ3GEY0R00 | 0 | |
| R364 | ERJ3GEYJ473 | 47K | |
| R365 | ERJ3GEYJ224 | 220K | |
| R366 | ERJ3GEYJ680 | 68 | |
| R368 | ERJ3GEYJ104 | 100K | |
| R369 | ERJ3GEYJ683 | 68K | |
| R370 | ERJ3GEY0R00 | 0 | |
| R371 | ERJ3GEYJ103 | 10K | |
| R372 | ERJ3GEYJ103 | 10K | |
| R373 | ERJ3GEYJ334 | 330K | |
| R382 | ERJ3GEYJ334 | 330K | |
| R400 | PQ4R18XJ100 | 10 | S |
| R410 | PQ4R10XJ100 | 10 | S |
| R411 | ERJ3GEYJ123 | 12K | |
| R413 | ERJ3GEYJ472 | 4.7K | |
| R414 | ERJ3GEYJ564 | 560K | |
| R415 | ERJ3GEYJ561 | 560 | |
| R416 | ERJ3GEYJ123 | 12K | |
| R417 | ERJ3GEYJ104 | 100K | |
| R420 | ERJ3GEYJ272 | 2.7K | |
| R421 | ERJ3GEYJ564 | 560K | |
| R422 | ERJ3GEYJ184 | 180K | |
| R423 | ERJ3GEYJ102 | 1K | |
| R425 | ERJ3GEYJ104 | 100K | |
| R428 | ERJ3GEYJ104 | 100K | |
| R430 | ERJ3GEYJ562 | 5.6K | |
| R431 | ERJ3GEYJ222 | 2.2K | |
| R432 | ERJ3GEYJ683 | 68K | |
| R433 | ERJ3GEYJ103 | 10K | |
| R434 | ERJ3GEYJ103 | 10K | |
| R435 | ERJ3GEYJ104 | 100K | |
| R437 | ERJ3GEYJ154 | 150K | |
| R438 | ERJ3GEYJ103 | 10K | |
| R439 | ERJ3GEYJ154 | 150K | |
| R441 | ERJ3GEYJ222 | 2.2K | |
| R442 | ERJ3GEYJ104 | 100K | |
| R448 | ERJ3GEYJ104 | 100K | |
| R451 | ERJ3GEYJ303 | 30K | |
| R452 | ERJ3GEYJ683 | 68K | |
| R453 | ERJ3GEYJ392 | 3.9K | |
| R454 | ERJ3GEYJ225 | 2.2M | |
| R455 | ERJ3GEYJ275 | 2.7M | |
| R456 | ERJ3GEYJ122 | 1.2K | |
| R457 | ERJ3GEYJ472 | 4.7K | |
| R458 | ERJ3GEYJ104 | 100K | |
| R459 | ERJ3GEYJ562 | 5.6K | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R460 | ERJ3GEYJ183 | 18K | |
| R461 | ERJ3GEYJ332 | 3.3K | |
| R462 | ERJ3GEYJ104 | 100K | |
| R463 | ERJ3GEYJ472 | 4.7K | |
| R464 | ERJ3GEYJ104 | 100K | |
| R465 | ERJ3GEYJ222 | 2.2K | |
| R466 | ERJ3GEYJ223 | 22K | |
| R481 | PQ4R10XJ100 | 10 | S |
| R482 | ERJ3GEY0R00 | 0 | |
| R483 | ERJ3GEYJ473 | 47K | |
| R484 | PQ4R10XJ471 | 470 | S |
| R508 | ERJ3GEYJ104 | 100K | |
| R539 | PQ4R18XJ100 | 10 | S |
| R550 | ERJ3GEYJ473 | 47K | |
| R551 | ERJ3GEYJ103 | 10K | |
| R552 | ERJ3GEYJ103 | 10K | |
| R553 | ERJ3GEYJ103 | 10K | |
| R554 | ERJ3GEYJ104 | 100K | |
| R555 | ERJ3GEYJ474 | 470K | |
| R556 | ERJ3GEYJ394 | 390K | |
| R557 | ERJ3GEYJ103 | 10K | |
| R558 | ERJ3GEYJ104 | 100K | |
| R559 | ERJ3GEYJ334 | 330K | |
| R560 | ERJ3GEYJ105 | 1M | |
| R602 | ERJ3GEYJ102 | 1K | |
| R603 | ERJ3GEYJ473 | 47K | |
| R610 | ERJ3GEYJ104 | 100K | |
| R611 | ERJ3GEYJ223 | 22K | |
| R612 | ERJ3GEYJ104 | 100K | |
| R613 | ERJ3GEYJ104 | 100K | |
| R618 | ERJ3GEYJ684 | 680K | |
| R650 | ERJ3GEYJ473 | 47K | |
| R651 | ERJ3GEYJ473 | 47K | |
| R652 | ERJ3GEYJ473 | 47K | |
| R653 | ERJ3GEYJ123 | 12K | |
| R654 | ERJ3GEYJ123 | 12K | |
| R710 | ERJ3GEYJ333 | 33K | |
| R711 | ERJ3GEYJ473 | 47K | |
| R712 | ERJ3GEYJ331 | 330 | |
| R713 | ERJ3GEYJ152 | 1.5K | |
| R714 | ERJ3GEYJ152 | 1.5K | |
| R715 | ERJ3GEYJ472 | 4.7K | |
| R716 | ERJ3GEYJ222 | 2.2K | |
| R717 | ERJ3GEYJ152 | 1.5K | |
| R718 | ERJ3GEYJ152 | 1.5K | |
| R719 | ERJ3GEYJ221 | 220 | |
| R720 | ERJ3GEYJ182 | 1.8K | |
| R721 | ERJ3GEYJ104 | 100K | |
| R722 | ERJ3GEYJ471 | 470 | |
| R723 | ERJ3GEYJ152 | 1.5K | |
| R724 | ERJ3GEYJ182 | 1.8K | |
| R725 | ERJ3GEYJ152 | 1.5K | |
| R726 | ERJ3GEYJ104 | 100K | |
| R727 | ERJ3GEYJ471 | 470 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R728 | ERJ3GEYJ103 | 10K | |
| R729 | ERJ3GEYJ103 | 10K | |
| R730 | ERJ3GEYJ222 | 2.2K | |
| R731 | ERJ3GEYJ823 | 82K | |
| R732 | ERJ3GEYJ103 | 10K | |
| R733 | ERJ3GEYJ104 | 100K | |
| R734 | ERJ3GEYJ123 | 12K | |
| R735 | ERJ3GEYJ331 | 330 | |
| R736 | ERJ3GEYJ273 | 27K | |
| R737 | ERJ3GEYJ470 | 47 | |
| R738 | ERJ3GEYJ103 | 10K | |
| R739 | ERJ3GEYJ123 | 12K | |
| R740 | ERJ3GEYJ123 | 12K | |
| R741 | ERJ3GEYJ473 | 47K | |
| R742 | ERJ3GEYJ224 | 220K | |
| R744 | ERJ3GEYJ183 | 18K | |
| R745 | ERJ3GEYJ103 | 10K | |
| R746 | ERJ3GEYJ183 | 18K | |
| R747 | ERJ3GEYJ104 | 100K | |
| R770 | ERJ3GEYJ473 | 47K | |
| R781 | ERJ3GEYJ472 | 4.7K | |
| R782 | ERJ3GEYJ152 | 1.5K | |
| R783 | ERJ3GEYJ394 | 390K | |
| R784 | ERJ3GEYJ151 | 150 | |
| R785 | ERJ3GEYJ823 | 82K | |
| R790 | ERJ3GEYJ223 | 22K | |
| R800 | ERJ3GEYJ105 | 1M | |
| R801 | ERJ3GEY0R00 | 0 | |
| R802 | ERJ3GEYJ104 | 100K | |
| R803 | ERJ3GEYJ104 | 100K | |
| R804 | ERJ3GEYJ222 | 2.2K | |
| R805 | ERJ3GEYJ222 | 2.2K | |
| R806 | ERJ3GEYJ222 | 2.2K | |
| R807 | ERJ3GEYJ222 | 2.2K | |
| R808 | ERJ3GEYJ106 | 10M | |
| R809 | ERJ3GEYJ104 | 100K | |
| R810 | ERJ3GEYJ222 | 2.2K | |
| R811 | ERJ3GEYJ222 | 2.2K | |
| R812 | ERJ3GEYJ222 | 2.2K | |
| R813 | ERJ3GEYJ222 | 2.2K | |
| R814 | ERJ3GEYJ472 | 4.7K | |
| R815 | ERJ3GEYJ472 | 4.7K | |
| R816 | ERJ3GEYJ472 | 4.7K | |
| R817 | ERJ3GEYJ472 | 4.7K | |
| R818 | ERJ3GEYJ222 | 2.2K | |
| R819 | ERJ3GEYJ472 | 4.7K | |
| R821 | ERJ3GEYJ104 | 100K | |
| R822 | ERJ3GEYJ104 | 100K | |
| R823 | ERJ3GEYJ104 | 100K | |
| R824 | ERJ3GEYJ104 | 100K | |
| R825 | ERJ3GEYJ104 | 100K | |
| R826 | ERJ3GEYJ104 | 100K | |
| R827 | ERJ3GEYJ104 | 100K | |
| R828 | ERJ3GEYJ104 | 100K | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R830 | ERJ3GEYJ104 | 100K | |
| R831 | ERJ3GEYJ104 | 100K | |
| R832 | ERJ3GEYJ104 | 100K | |
| R833 | ERJ3GEYJ104 | 100K | |
| R834 | ERJ3GEYJ104 | 100K | |
| R835 | ERJ3GEYJ104 | 100K | |
| R836 | ERJ3GEYJ104 | 100K | |
| R837 | ERJ3GEYJ104 | 100K | |
| R840 | ERJ3GEY0R00 | 0 | |
| R841 | ERJ3GEYJ104 | 100K | |
| R846 | ERJ3GEY0R00 | 0 | |
| R847 | PQ4R18XJ100 | 10 | S |
| J302 | PQ4R18XJ000 | 0 | S |
| | | (CAPACITORS) | |
| C101 | ECQE2224KF | 0.22 | |
| C102 | ECKT2H152KB | 0.0015 | S |
| C103 | ECKT2H152KB | 0.0015 | S |
| C110 | ECUV2H681KB | 680P | |
| C111 | ECUV2H681KB | 680P | |
| C112 | ECEA0JKS101 | 100 | |
| C114 | ECUV1C683KBV | 0.068 | |
| C115 | ECUV1H152KBV | 0.0015 | |
| C116 | ECUV1H221JCV | 220P | S |
| C117 | ECEA1HKS2R2 | 2.2 | S |
| C130 | ECUV1C104KBV | 0.1 | |
| C132 | ECUV1C104KBV | 0.1 | |
| C134 | ECEA1CKS100 | 10 | |
| C135 | ECEA1CK101 | 100 | S |
| C136 | ECEA1HKS010 | 1 | |
| C150 | ECUV1H103KBV | 0.01 | |
| C151 | ECEA1CKS100 | 10 | |
| C152 | ECEA1CKS100 | 10 | |
| C154 | ECEA1CKA470 | 47 | |
| C155 | ECUV1C393KBV | 0.039 | |
| C156 | ECUV1A105KBV | 1 | |
| C157 | ECUV1A224KBV | 0.22 | |
| C158 | ECUV1H151JCV | 150P | |
| C159 | ECEA0JKS470 | 47 | |
| C160 | ECEA0JSJ331 | 330 | S |
| C180 | ECUV1C473KBV | 0.047 | |
| C201 | ECQE2224KF | 0.22 | |
| C202 | ECKT2H152KB | 0.0015 | S |
| C203 | ECKT2H152KB | 0.0015 | S |
| C209 | ECUV1E223KBV | 0.022 | |
| C210 | ECUV2H681KB | 680P | |
| C211 | ECUV2H681KB | 680P | |
| C212 | ECEA1AU101 | 100 | S |
| C214 | ECUV1C683KBV | 0.068 | |
| C215 | ECUV1H152KBV | 0.0015 | |
| C216 | ECUV1H221JCV | 220P | S |
| C217 | ECEA1HKS2R2 | 2.2 | S |
| C218 | ECEA1CKS470 | 47 | S |
| C230 | ECUV1C104KBV | 0.1 | |
| C232 | ECUV1C104KBV | 0.1 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C234 | ECEA1CKS100 | 10 | |
| C235 | ECEA1EU101 | 100 | S |
| C236 | ECEA1HKS010 | 1 | |
| C253 | ECEA0JKS101 | 100 | |
| C300 | ECUV1H103KBV | 0.01 | |
| C301 | ECEA1CKA470 | 47 | |
| C302 | ECEA1CKA470 | 47 | |
| C303 | ECUV1C104KBV | 0.1 | |
| C304 | ECUV1H101JCV | 100P | |
| C305 | ECUV1H331JCV | 330P | S |
| C306 | ECUV1H472KBV | 0.0047 | |
| C307 | ECEA0JKA221 | 220 | |
| C310 | ECUV1H103KBV | 0.01 | |
| C311 | ECUV1H472KBV | 0.0047 | |
| C312 | ECUV1C273KBV | 0.027 | |
| C313 | ECUV1H183KBV | 0.018 | |
| C350 | ECUV1C104KBV | 0.1 | |
| C351 | ECUV1A224KBV | 0.22 | |
| C352 | ECUV1A224KBV | 0.22 | |
| C353 | ECUV1A224KBV | 0.22 | |
| C354 | ECUV1C104KBV | 0.1 | |
| C356 | ECUV1C104KBV | 0.1 | |
| C358 | ECEA1CKA100 | 10 | |
| C359 | ECUV1H472KBV | 0.0047 | |
| C360 | ECUV1C104KBV | 0.1 | |
| C361 | ECUV1C104KBV | 0.1 | |
| C362 | ECUV1C104KBV | 0.1 | |
| C363 | ECUV1C104KBV | 0.1 | |
| C380 | ECUV1H101JCV | 100P | |
| C381 | ECUV1H221JCV | 220P | S |
| C410 | ECUV1H103KBV | 0.01 | |
| C411 | ECUV1H122KBV | 0.0012 | |
| C412 | ECUV1H333KBV | 0.033 | S |
| C413 | ECEA0JKS470 | 47 | |
| C420 | ECUV1H180JCV | 18P | |
| C423 | ECUV1C104KBV | 0.1 | |
| C428 | ECUV1A224KBV | 0.22 | |
| C430 | ECUV1C104KBV | 0.1 | |
| C431 | ECUV1H332KBV | 0.0033 | |
| C432 | ECUV1H182KBV | 0.0018 | |
| C433 | ECUV1H103KBV | 0.01 | |
| C434 | ECUV1H103KBV | 0.01 | |
| C435 | ECUV1C104KBV | 0.1 | |
| C446 | ECUV1H103KBV | 0.01 | |
| C450 | ECUV1C393KBV | 0.039 | |
| C451 | ECUV1H822KBV | 0.0082 | |
| C453 | ECUV1C473KBV | 0.047 | |
| C454 | ECUV1C104KBV | 0.1 | |
| C455 | PQCUV1C105KB | 1 | |
| C456 | PQCUV1C105KB | 1 | |
| C457 | ECEA1HKA4R7 | 4.7 | |
| C458 | ECUV1C683KBV | 0.068 | |
| C459 | ECEA1CKS470 | 47 | S |
| C460 | ECUV1C393KBV | 0.039 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C461 | ECUV1C473KBV | 0.047 | |
| C462 | ECUV1E223KBV | 0.022 | |
| C463 | ECEA1CKA100 | 10 | |
| C464 | ECEA1HKA4R7 | 4.7 | |
| C465 | ECEA0JKA101 | 100 | |
| C466 | ECEA1AKA101 | 100 | |
| C467 | PQCUV1C105KB | 1 | |
| C468 | ECUV1C105ZFV | 1 | |
| C469 | ECEA1AKA101 | 100 | |
| C470 | ECEA1CU471 | 470 | |
| C471 | ECUV1C104KBV | 0.1 | |
| C472 | ECUV1C104KBV | 0.1 | |
| C473 | ECUV1H103KBV | 0.01 | |
| C481 | ECEA0JKA101 | 100 | |
| C550 | ECUV1C104KBV | 0.1 | |
| C551 | ECUV1C104KBV | 0.1 | |
| C552 | ECUV1C104KBV | 0.1 | |
| C553 | ECUV1H103KBV | 0.01 | |
| C554 | ECUV1C104KBV | 0.1 | |
| C555 | ECUV1A224KBV | 0.22 | |
| C556 | ECUV1H330JCV | 33P | |
| C557 | ECUV1H330JCV | 33P | |
| C558 | ECUV1C473KBV | 0.047 | |
| C559 | ECUV1C104ZFV | 0.1 | |
| C560 | ECEA0JSJ331 | 330 | S |
| C565 | ECUV1H271KBV | 270P | |
| C600 | ECEA1AKA101 | 100 | |
| C602 | ECEA1EK470 | 47 | S |
| C603 | ECEA1AU101 | 100 | |
| C604 | ECUV1C104ZFV | 0.1 | |
| C610 | ECUV1H333KBV | 0.033 | S |
| C611 | ECEA0JU102 | 1000 | |
| C620 | ECUV1C104ZFV | 0.1 | |
| C621 | ECUV1C104ZFV | 0.1 | |
| C622 | ECEA1AU221 | 220 | |
| C624 | ECEA0JKS470 | 47 | |
| C710 | ECUV1H222KBV | 0.0022 | |
| C711 | ECUV1H332KBV | 0.0033 | |
| C712 | ECUV1E223KBV | 0.022 | |
| C713 | ECUV1H472KBV | 0.0047 | |
| C714 | ECUV1H331JCV | 330P | S |
| C715 | ECUV1H103KBV | 0.01 | |
| C716 | ECUV1H103KBV | 0.01 | |
| C717 | ECKD2H103KB | 0.01 | S |
| C718 | ECUV1H102KBV | 0.001 | |
| C719 | ECUV1H332KBV | 0.0033 | |
| C720 | ECUV1H103KBV | 0.01 | |
| C721 | ECUV1H103KBV | 0.01 | |
| C722 | ECUV1H103KBV | 0.01 | |
| C723 | ECUV1H102KBV | 0.001 | |
| C724 | ECUV1H332KBV | 0.0033 | |
| C725 | ECUV1H103KBV | 0.01 | |
| C726 | ECUV1C104KBV | 0.1 | |
| C727 | ECUV1H332KBV | 0.0033 | |

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| C728 | ECUV1C105ZFV | 1 | |
| C729 | ECUV1H333KBV | 0.033 | S |
| C730 | ECUV1H272KBV | 0.0027 | |
| C731 | ECUV1C105ZFV | 1 | |
| C732 | ECUV1C105ZFV | 1 | |
| C733 | ECUV1C105ZFV | 1 | |
| C734 | ECUV1C105ZFV | 1 | |
| C735 | ECUV1C104KBV | 0.1 | |
| C736 | ECUV1C105ZFV | 1 | |
| C737 | ECUV1C105ZFV | 1 | |
| C738 | ECUV1C105ZFV | 1 | |
| C739 | ECUV1C105ZFV | 1 | |
| C740 | ECUV1A154KBV | 0.15 | |
| C741 | ECUV1H103KBV | 0.01 | |
| C742 | ECUV1H221JCV | 220P | S |
| C743 | ECUV1H221JCV | 220P | S |
| C745 | ECUV1H101JCV | 100P | |
| C746 | ECUV1H101JCV | 100P | |
| C747 | ECUV1H103KBV | 0.01 | |
| C749 | ECUV1H103KBV | 0.01 | |
| C750 | ECUV1H101JCV | 100P | |
| C751 | ECUV1H222KBV | 0.0022 | |
| C752 | ECUV1C105ZFV | 1 | |
| C779 | ECEA0JKS101 | 100 | |
| C780 | ECEA0JSJ331 | 330 | S |
| C781 | ECUV1H152KBV | 0.0015 | |
| C782 | ECUV1C273KBV | 0.027 | |
| C790 | ECUV1C104KBV | 0.1 | |
| C801 | ECUV1H180JCV | 18P | |
| C802 | ECUV1H180JCV | 18P | |
| C815 | ECUV1H472KBV | 0.0047 | |
| C819 | ECUV1A106ZF | 10 | |
| | | (OTHERS) | |
| E1 | PQEFBDB111GF | BUZZER | |
| E2 | PQSH2B105Z | SWITCH, HOOK | |

## 17.1.3. Operational P.C.Board

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| PCB2 | PQWP2TS3282W | OPERATIONAL P.C.BOARD ASS'Y (RTL) | |
| | | (IC) | |
| IC605 | C0HBZ0000038 | IC | |
| | | (DIODES) | |
| D901 | PSVD1SRCT | LED | S |
| D902 | PSVD1SRCT | LED | S |
| D903 | PSVD1SRCT | LED | S |
| D904 | PSVD1SRCT | LED | S |
| D905 | PSVD1SRCT | LED | S |
| D906 | PSVD1SRCT | LED | S |
| D907 | PSVD1SRCT | LED | S |
| D908 | PSVD1SRCT | LED | S |
| D909 | PSVD1SRCT | LED | S |
| D910 | PSVD1SRCT | LED | S |
| D911 | PSVD1SRCT | LED | S |
| D912 | PSVD1SRCT | LED | S |
| | | (RESISTORS) | |
| R901 | ERJ3GEYJ182 | 1.8K | |
| R902 | ERJ3GEYJ182 | 1.8K | |
| R903 | ERJ3GEYJ182 | 1.8K | |
| R904 | ERJ3GEYJ122 | 1.2K | |
| R905 | ERJ3GEYJ222 | 2.2K | |
| R906 | ERJ3GEYJ222 | 2.2K | |
| R907 | ERJ3GEYJ222 | 2.2K | |
| R908 | ERJ3GEYJ222 | 2.2K | |
| R909 | ERJ3GEYJ222 | 2.2K | |
| R910 | ERJ3GEYJ222 | 2.2K | |
| R911 | ERJ3GEYJ222 | 2.2K | |
| R912 | ERJ3GEYJ222 | 2.2K | |
| R913 | ERJ3GEYJ123 | 12K | |
| J905 | PQ4R18XJ000 | 0 | S |
| | | (CAPACITORS) | |
| C1 | ECUV1C104KBV | 0.1 | |
| C2 | ECUV1C104KBV | 0.1 | |
| | | (OTHERS) | |
| E3 | PQJM122Z | MICROPHONE | |
| J901 | PQJT10021Z | TERMINAL | |
| J903 | PQJT10021Z | TERMINAL | |
| CN105 | PQJS24X54Z | CONNECTOR, FFC | S |

## 17.2. Accessories and Packing Materials

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| A1 | KX-TCA1-G | AC ADAPTOR | ⚠ |
| A2 | PQJA10075Z | CORD, TELEPHONE | |
| A3 | PQJA10088Z | CORD, TELEPHONE | |
| A4 | PQJA212M | CORD, HANDSET | |
| A5 | PQJXC0402Z | HANDSET | |
| A6 | PQQX13437Y | INSTRUCTION BOOK | |
| A7 | PQQW12702Z | QUICK GUIDE (for English) | |
| A8 | PQQW12703Z | QUICK GUIDE (for Spanish) | |
| A9 | PQQW12576Z | LEAFLET, #800 | |
| A10 | PQXDDS400-8 | LABEL, SECURITY TAG | |
| A11 | PQPD10553Y | CUSHION | |
| P1 | PQPH89Y | PROTECTION COVER | |
| P2 | PQPK13817Y | GIFT BOX | |

# 18. FOR SCHEMATIC DIAGRAM (SCHEMATIC DIAGRAM)

1. DC voltage measurements are taken with electronic voltmeter from negative terminal.
   (Add 40 mA to telephone line from the loop simulator.)
2. This schematic diagram may be modified at any time with the development of new technology.

Important Safety Notice: / Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only the manufacturer´s specified parts.

# 19. SCHEMATIC DIAGRAM

## 19.1. Main

## 19.2. Operation

# 20. CIRCUIT BOARD

## 20.1. Main

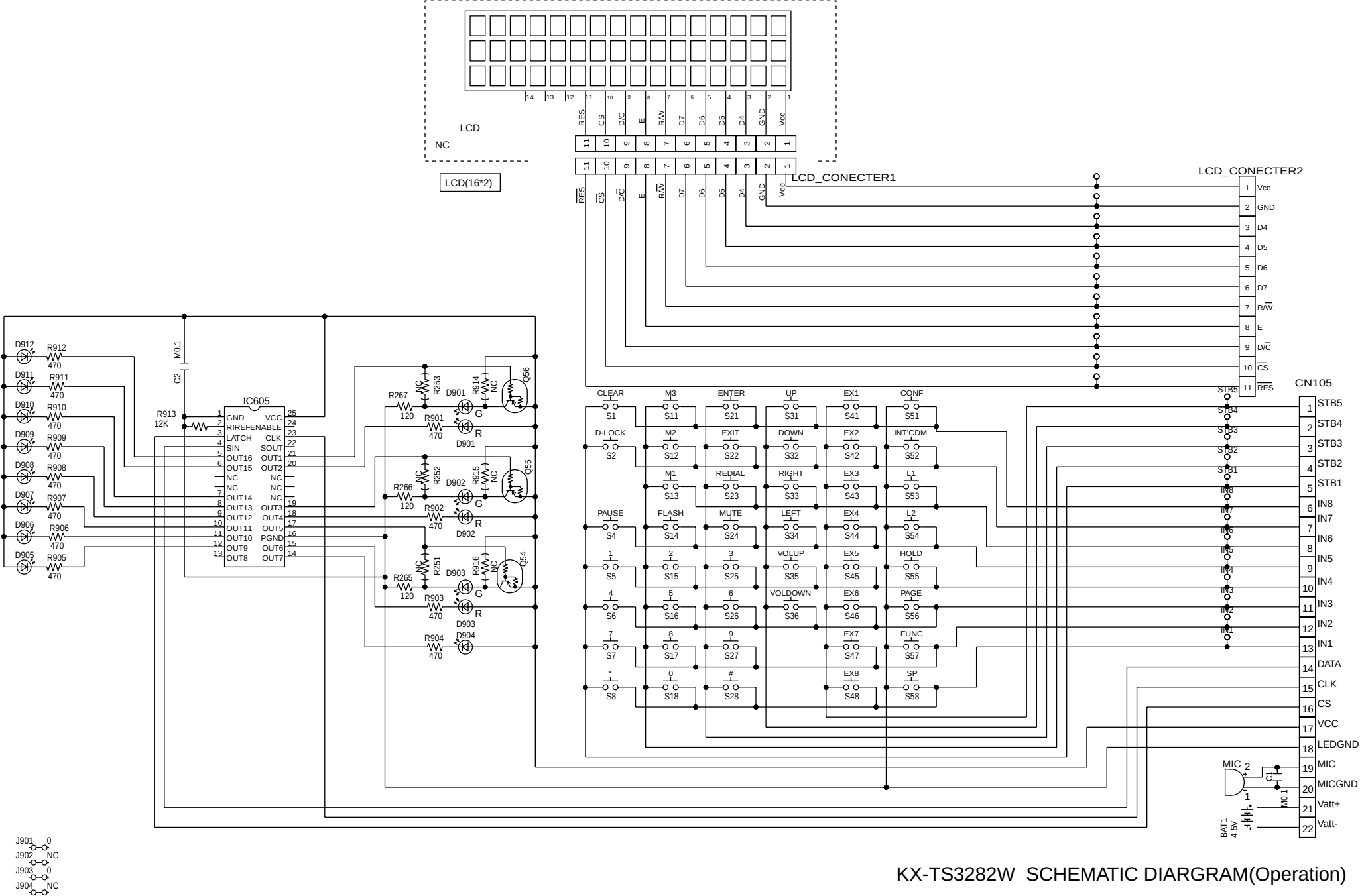
### 20.1.1. Component View

### 20.1.2. Flow Solder Side View

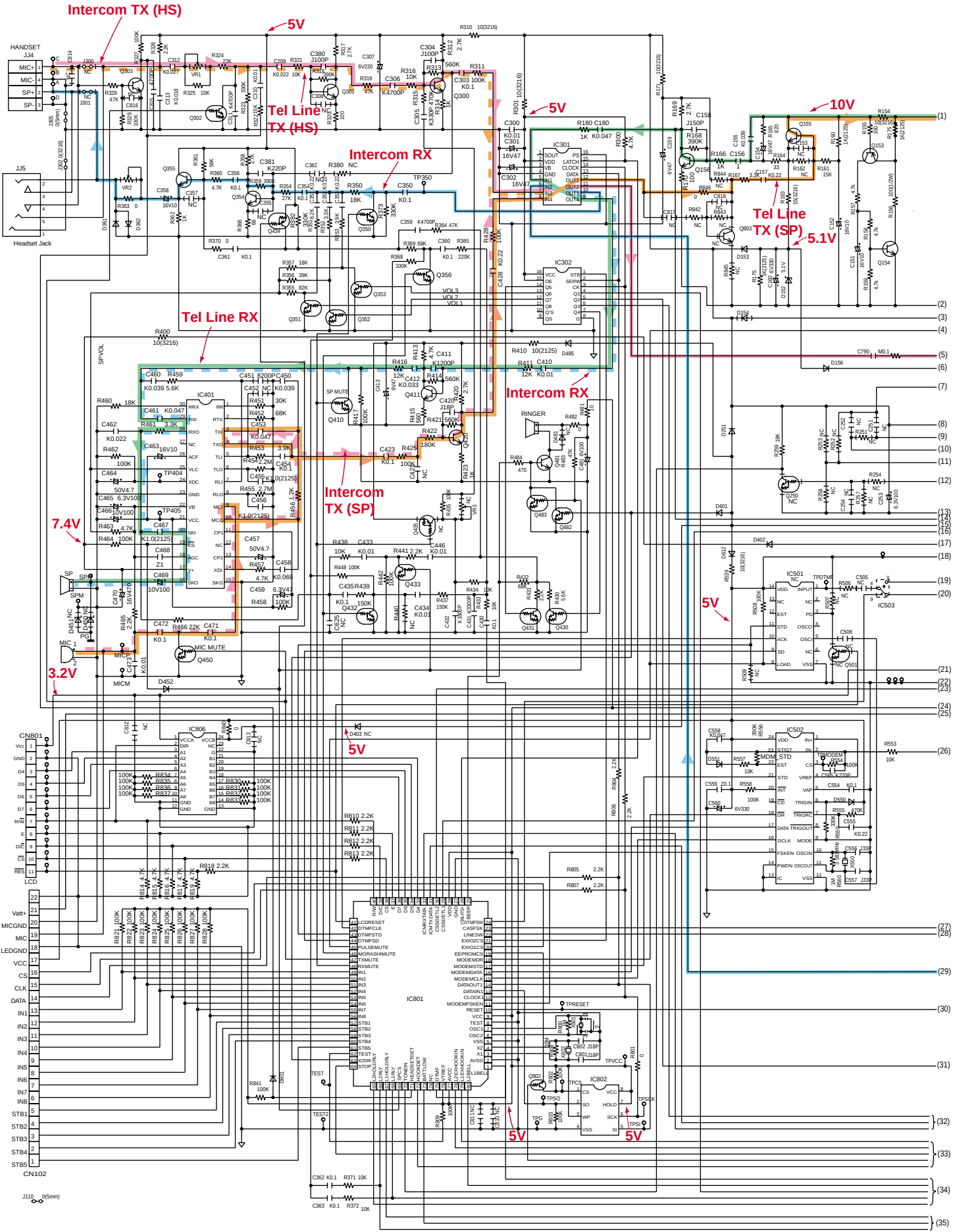
## 20.2. Operation

### 20.2.1. Component View

### 20.2.2. Flow Solder Side View




KX-TS3282W SCHEMATIC DIARGRAM(Operation)


Intercom TX (HS)
5V
Tel Line TX (HS)
Intercom RX
5V
10V
Tel Line TX (SP)
5.1V
Tel Line RX
Intercom RX
Intercom TX (SP)
7.4V
3.2V
5V
HANDSET
J34
MIC+
MIC-
SP+
SP-
Headset Jack
J305
J302 (X2316)
J301
J300
J303
J304
J306
J307
J308
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J314
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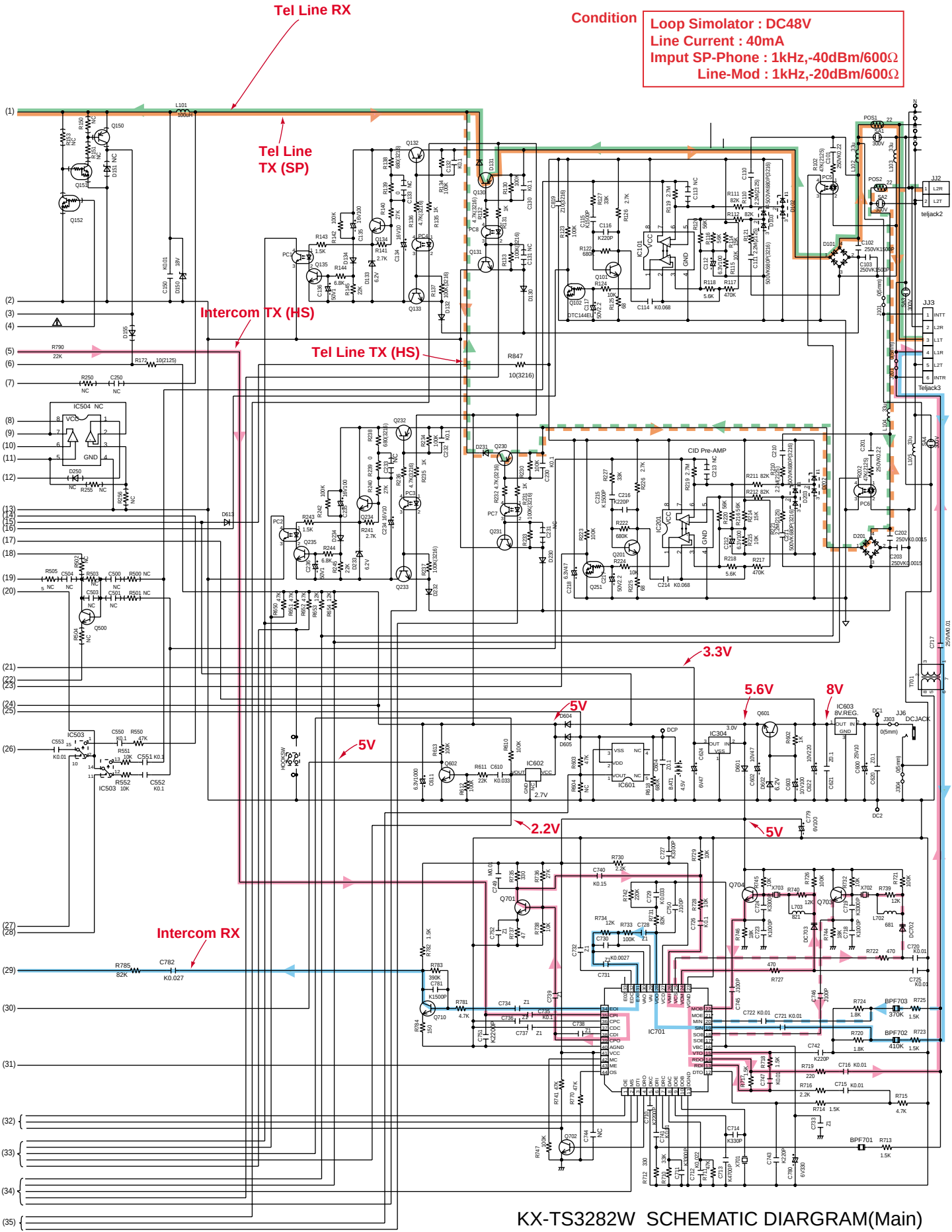
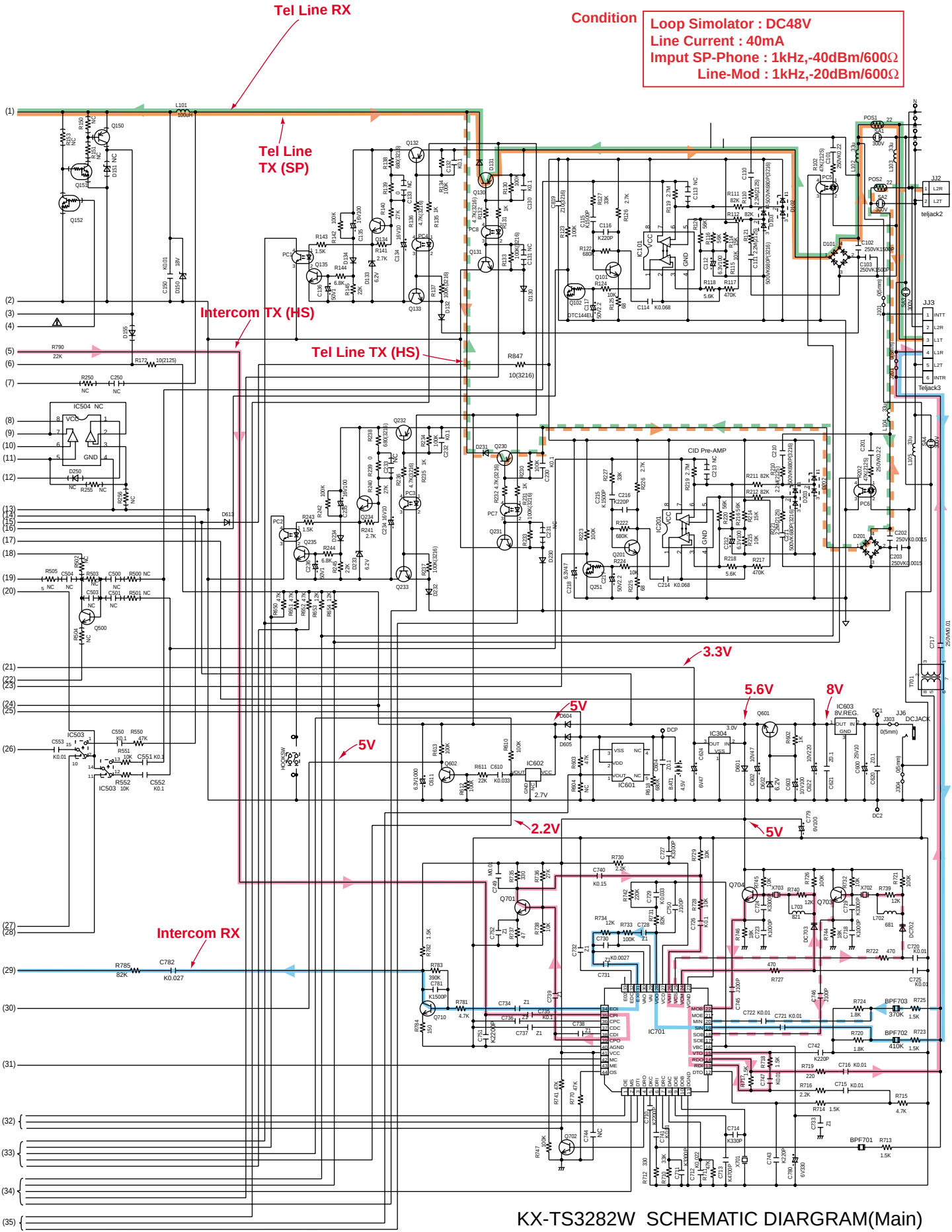
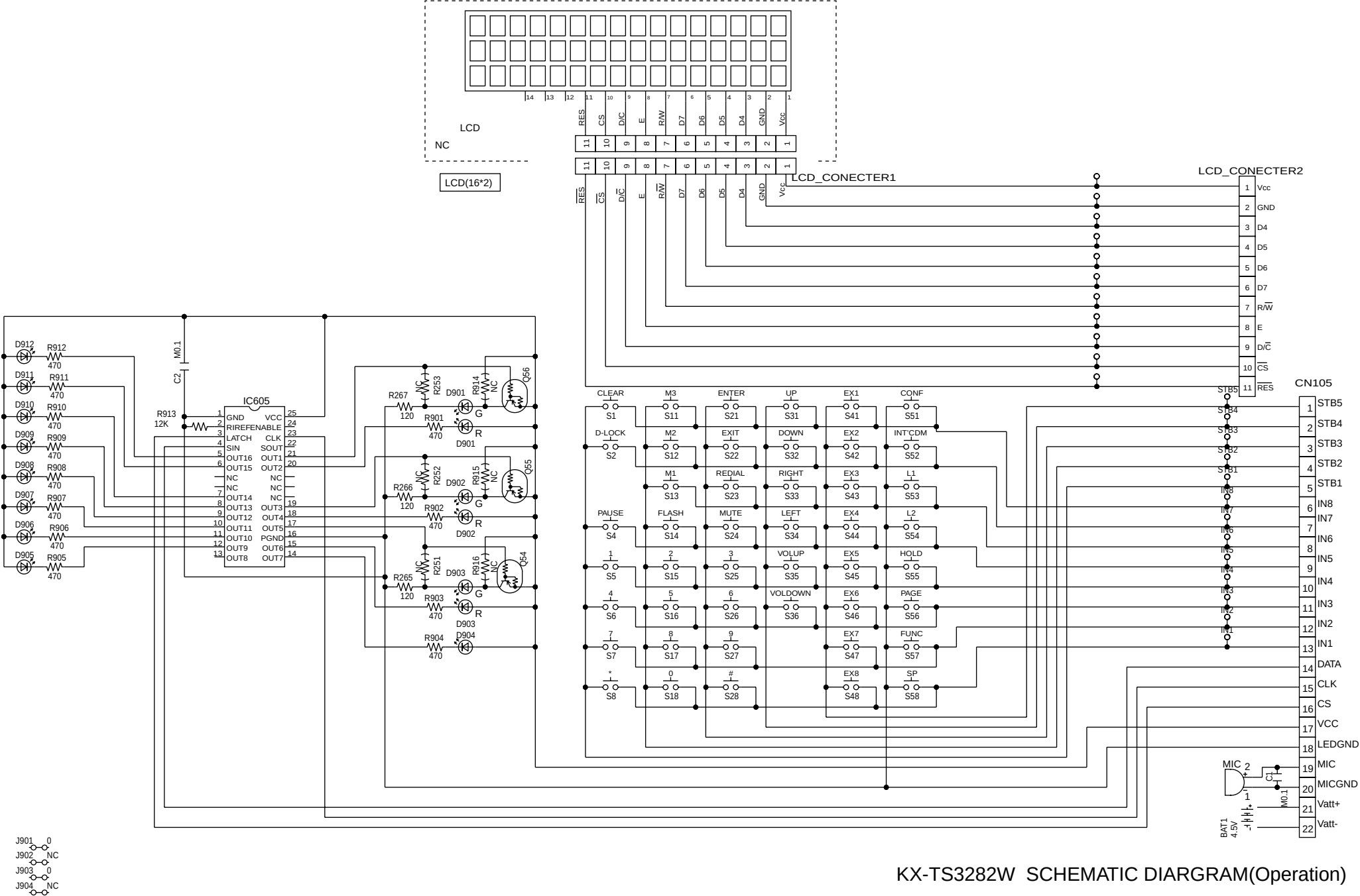


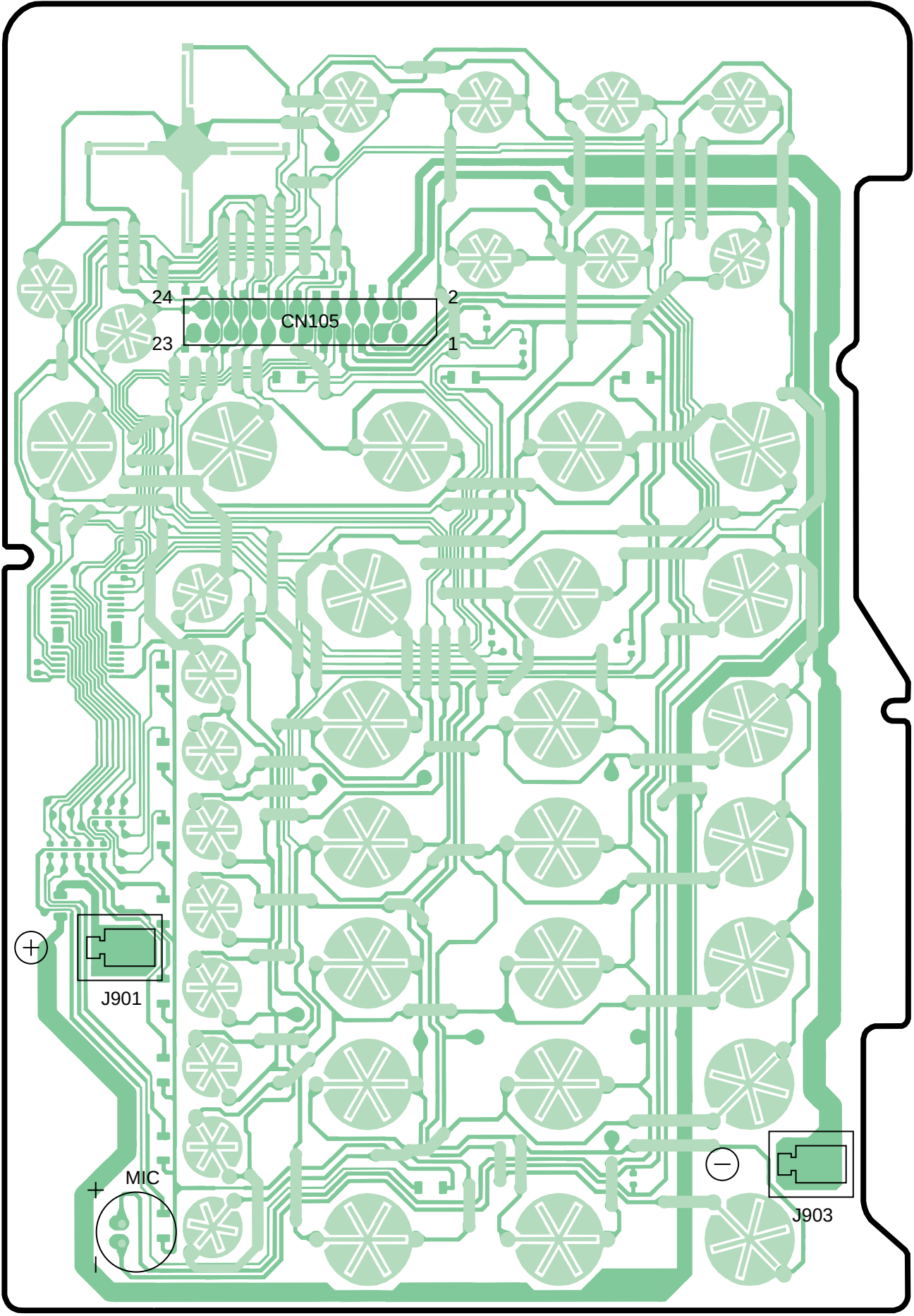

KX-TS3282W SCHEMATIC DIARGRAM(Main)



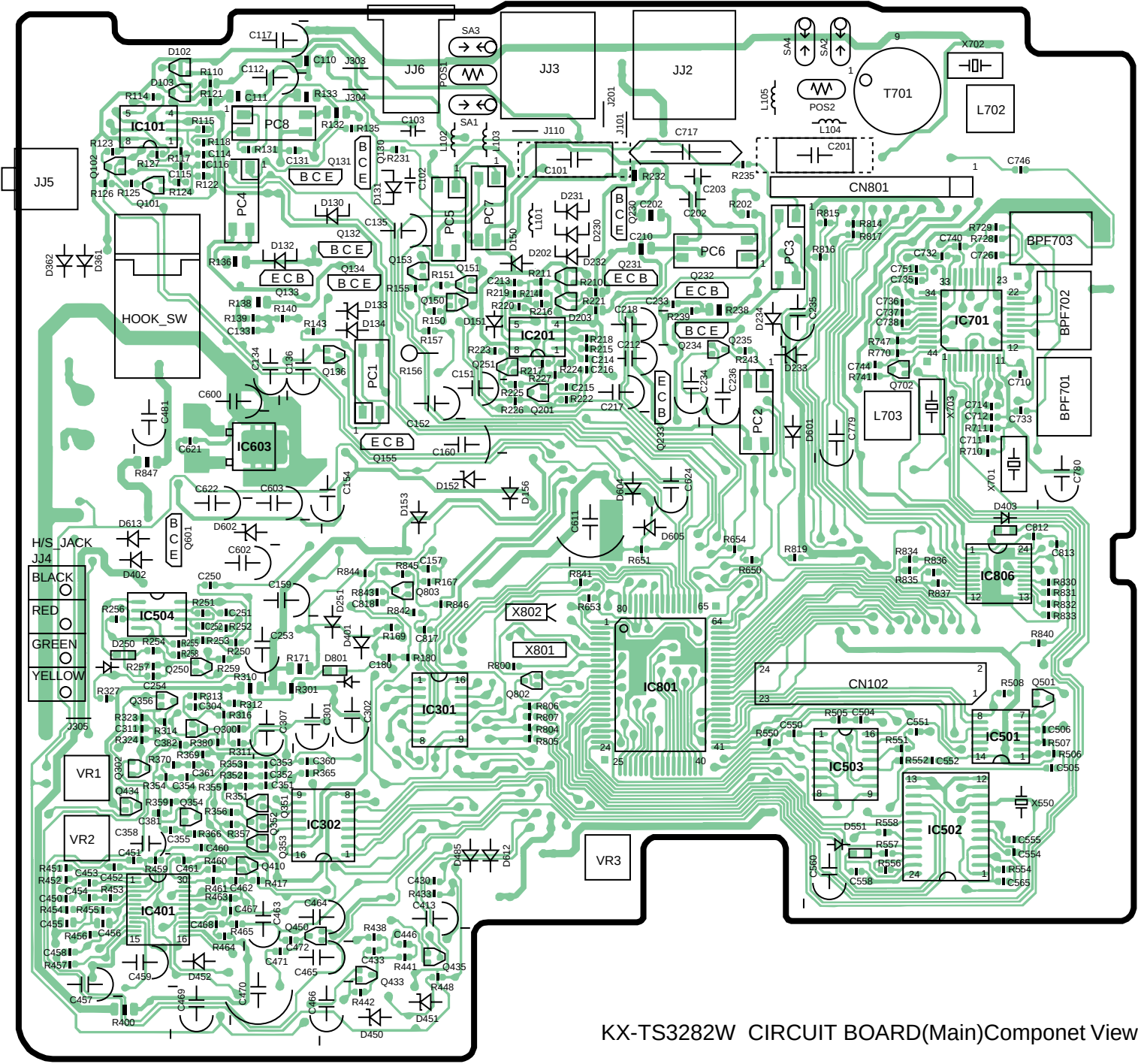

KX-TS3282W SCHEMATIC DIARGRAM(Main)



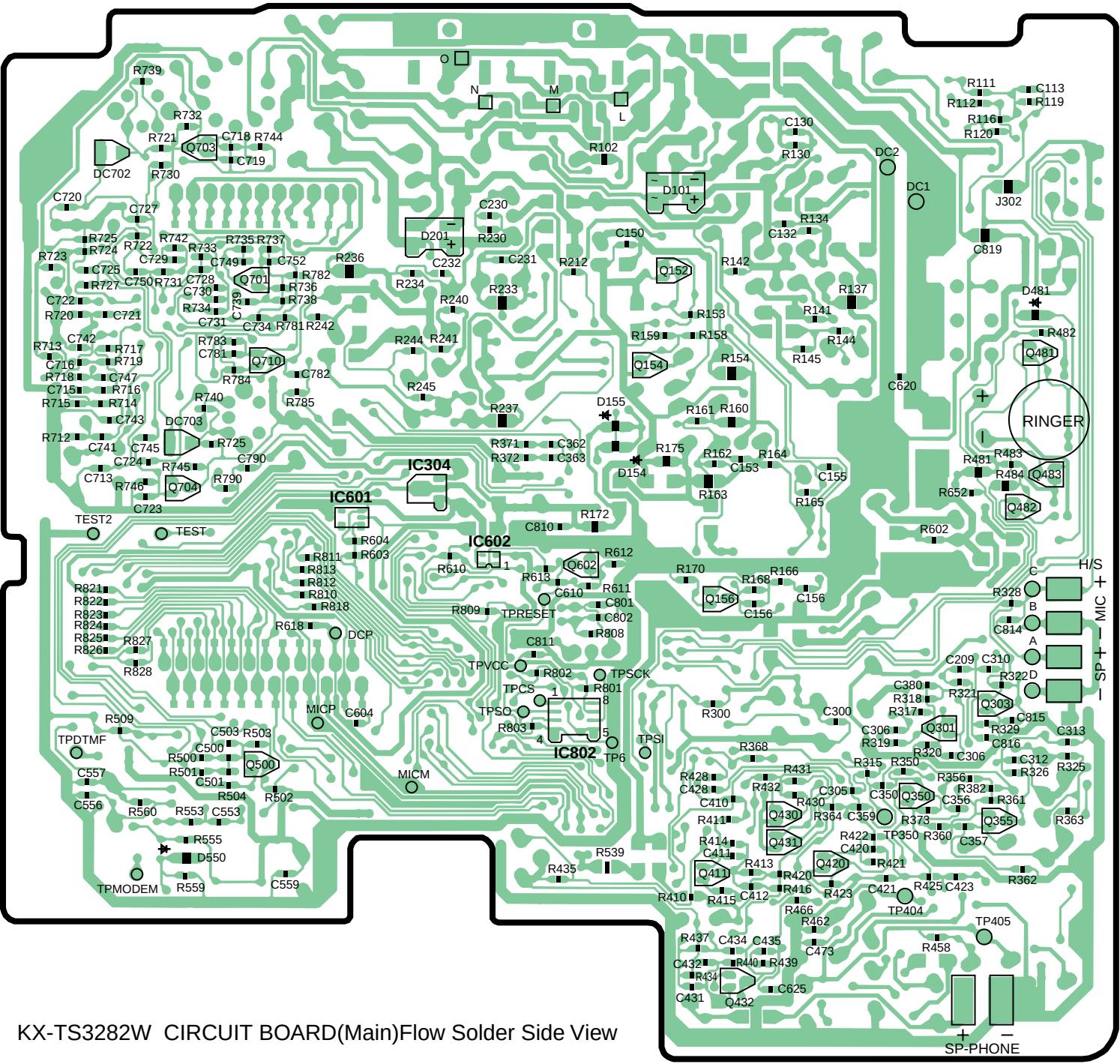

KX-TS3282W SCHEMATIC DIARGRAM(Operation)



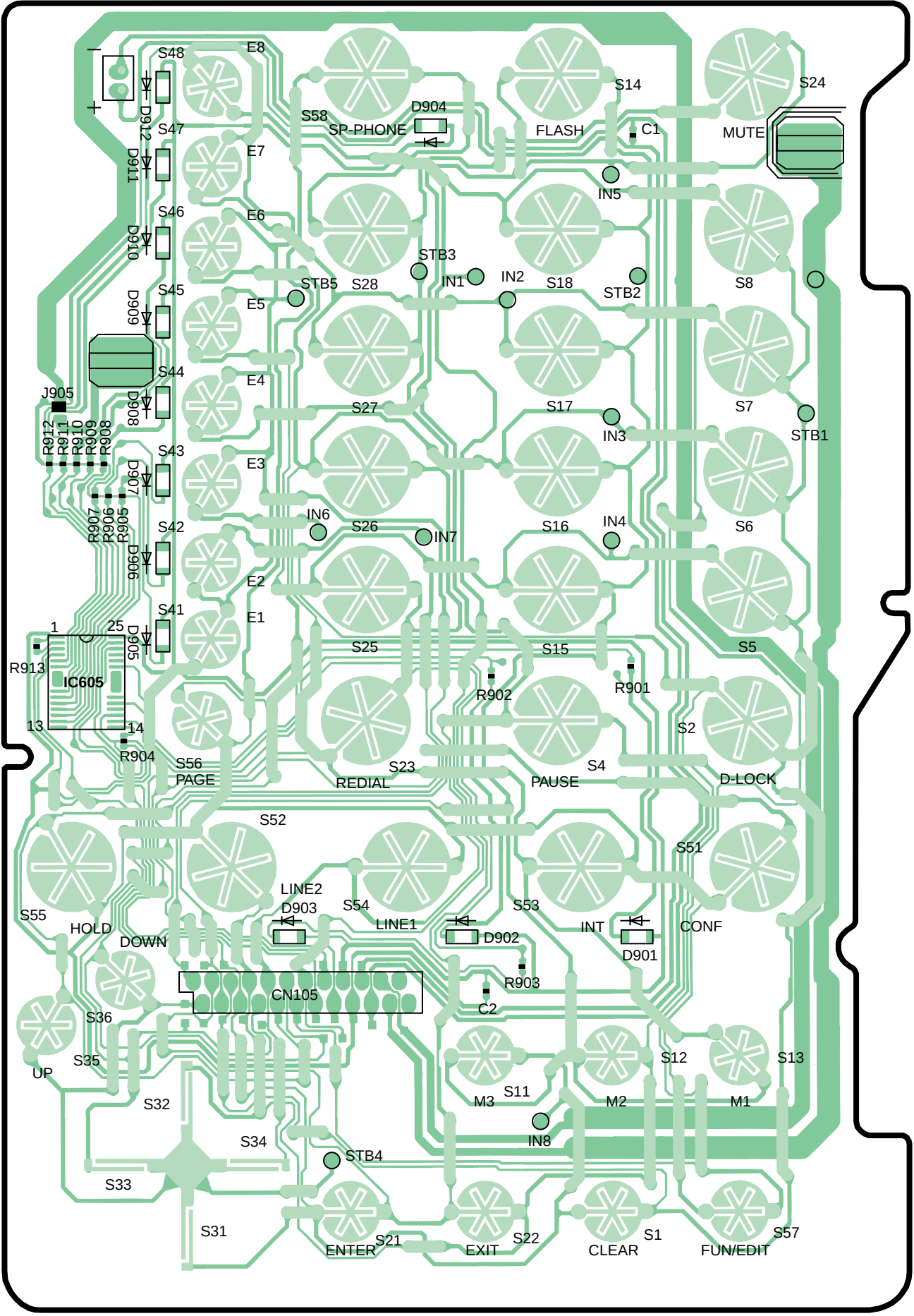

KX-TS3282W CIRCUIT BOARD(Operation)Flow Solder Side View



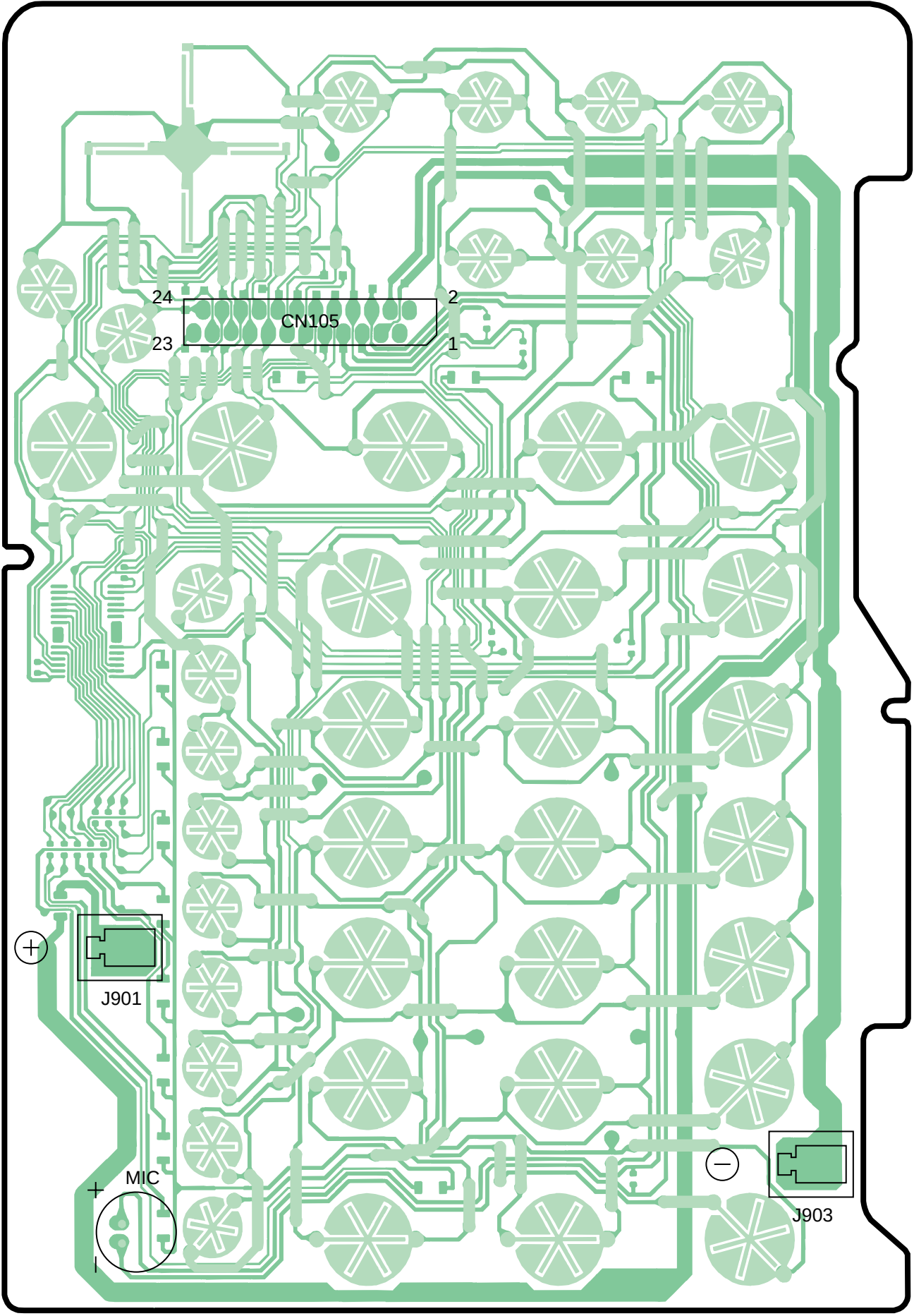

KX-TS3282W CIRCUIT BOARD(Main)Componet View



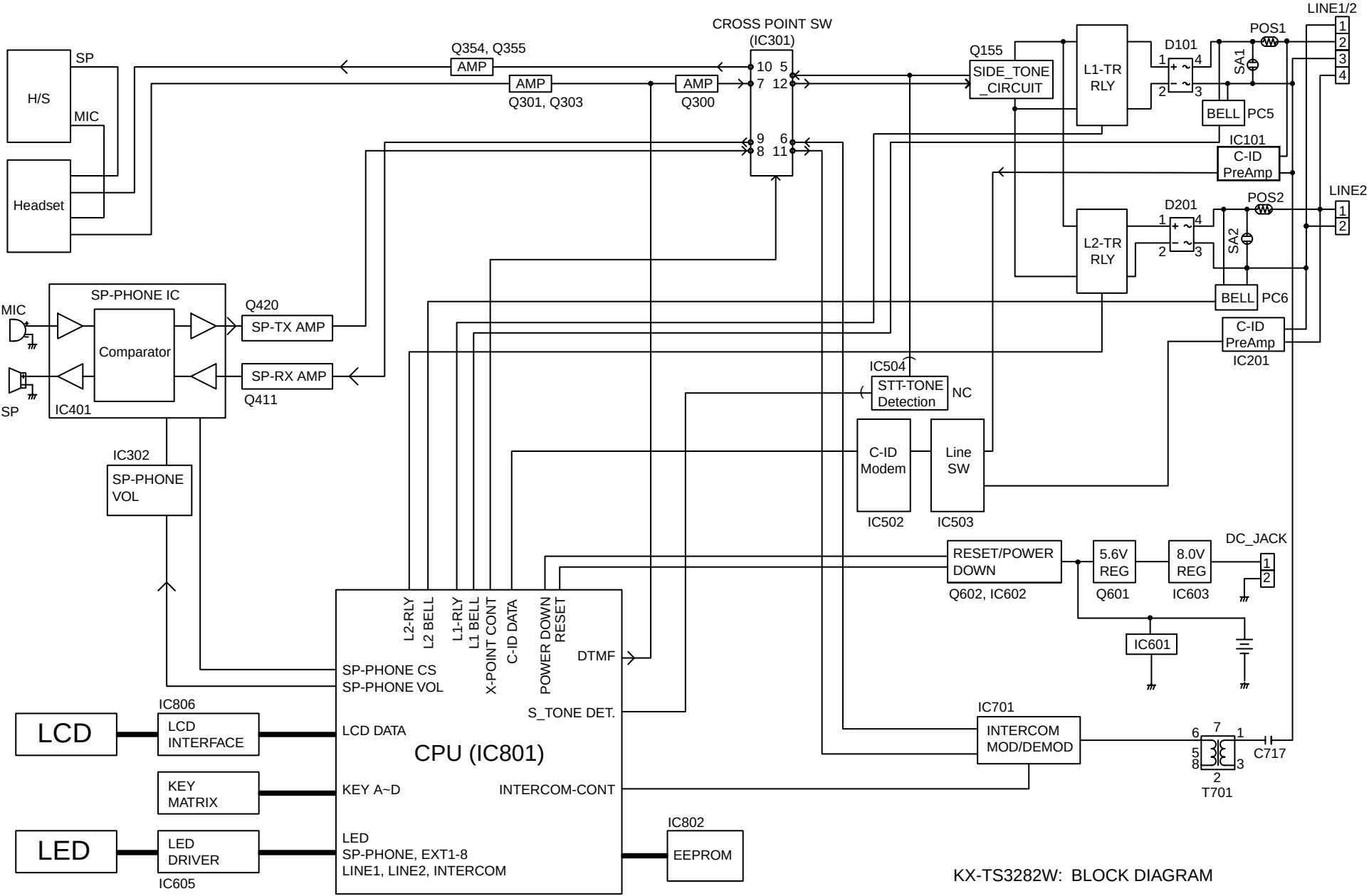

KX-TS3282W CIRCUIT BOARD(Main)Flow Solder Side View

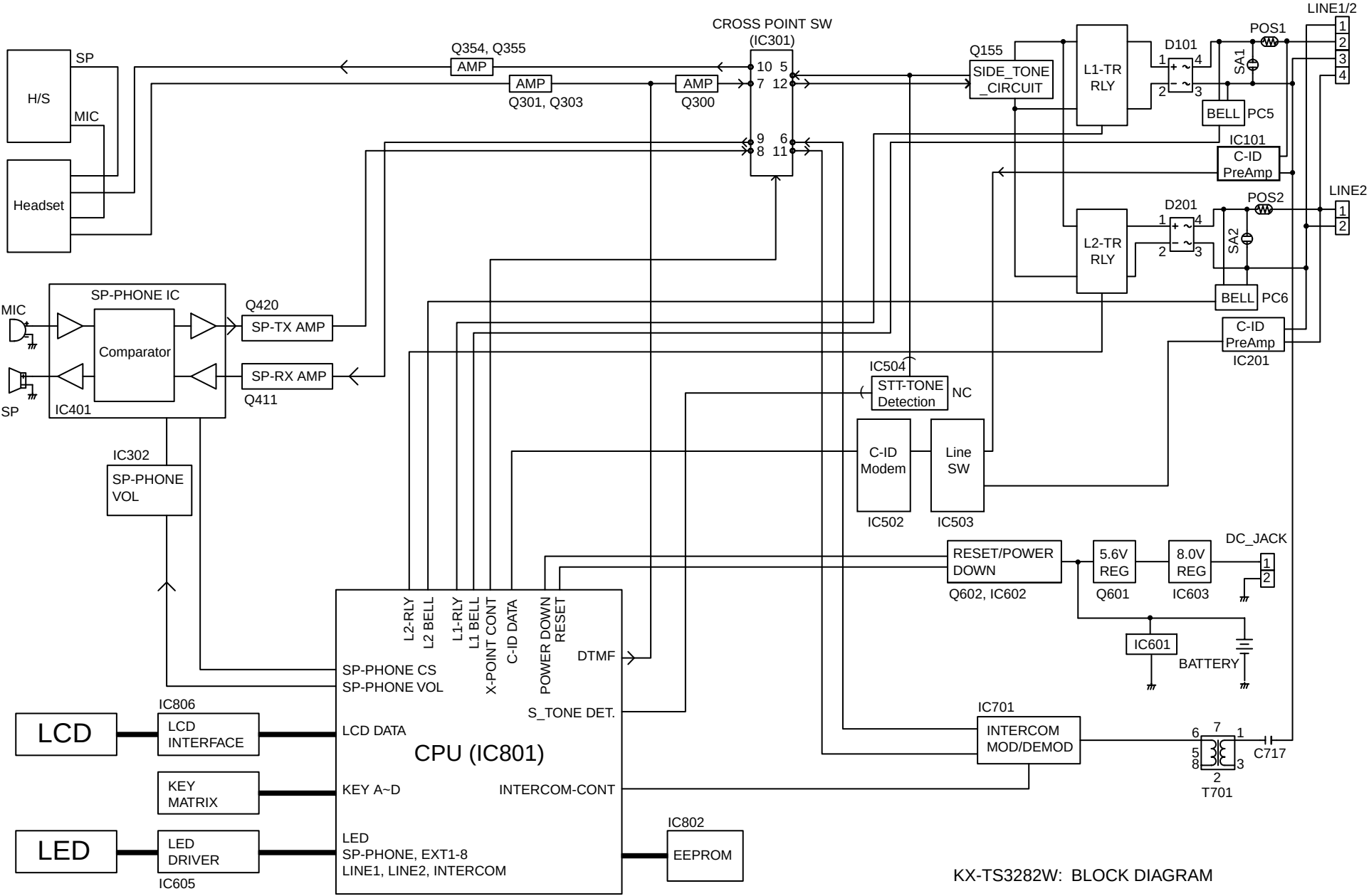


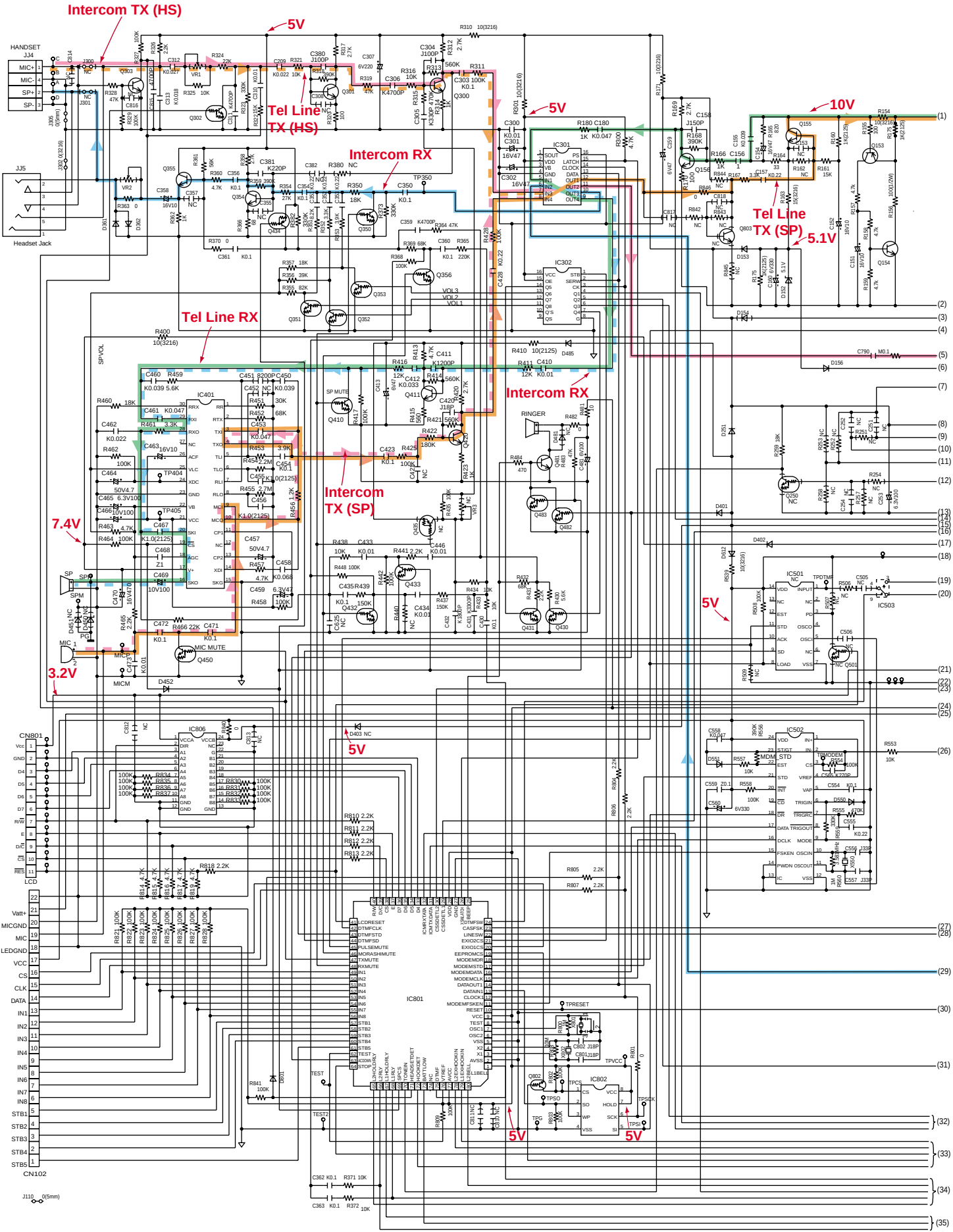

KX-TS3282W CIRCUIT BOARD(Operation)Componet View




KX-TS3282W CIRCUIT BOARD(Operation)Flow Solder Side View


H/S
SP
MIC
Headset
Q354, Q355
AMP
AMP
Q301, Q303
AMP
Q300
CROSS POINT SW
(IC301)
10 5
7 12
9 6
8 11
Q155
SIDE_TONE
_CIRCUIT
L1-TR
RLY
L2-TR
RLY
D101
D201
SA1
SA2
POS1
POS2
BELL
PC5
BELL
PC6
IC101
C-ID
PreAmp
C-ID
PreAmp
IC201
LINE1/2
LINE2
SP-PHONE IC
MIC
SP
Comparator
Q420
SP-TX AMP
SP-RX AMP
Q411
IC401
IC504
STT-TONE
Detection
NC
C-ID
Modem
IC502
Line
SW
IC503
IC302
SP-PHONE
VOL
RESET/POWER
DOWN
Q602, IC602
5.6V
REG
Q601
8.0V
REG
IC603
DC_JACK
IC601
L2-RLY
L2 BELL
L1-RLY
L1 BELL
X-POINT CONT
C-ID DATA
POWER DOWN
RESET
DTMF
SP-PHONE CS
SP-PHONE VOL
S_TONE DET.
LCD DATA
CPU (IC801)
KEY A~D
INTERCOM-CONT
LED
SP-PHONE, EXT1-8
LINE1, LINE2, INTERCOM
IC806
LCD
LCD
INTERFACE
KEY
MATRIX
LED
LED
DRIVER
IC605
IC802
EEPROM
IC701
INTERCOM
MOD/DEMOD
C717
T701
KX-TS3282W: BLOCK DIAGRAM


H/S
SP
MIC
Headset
Q354, Q355
AMP
AMP
Q301, Q303
AMP
Q300
CROSS POINT SW
(IC301)
10 5
7 12
9 6
8 11
Q155
SIDE_TONE
_CIRCUIT
L1-TR
RLY
L2-TR
RLY
D101
D201
SA1
SA2
POS1
POS2
BELL
PC5
BELL
PC6
IC101
C-ID
PreAmp
C-ID
PreAmp
IC201
LINE1/2
LINE2
SP-PHONE IC
Comparator
IC401
MIC
SP
Q420
SP-TX AMP
SP-RX AMP
Q411
IC504
STT-TONE
Detection
NC
C-ID
Modem
IC502
Line
SW
IC503
IC302
SP-PHONE
VOL
RESET/POWER
DOWN
Q602, IC602
5.6V
REG
Q601
8.0V
REG
IC603
DC_JACK
IC601
BATTERY
L2-RLY
L2 BELL
L1-RLY
L1 BELL
X-POINT CONT
C-ID DATA
POWER DOWN
RESET
DTMF
SP-PHONE CS
SP-PHONE VOL
S_TONE DET.
LCD DATA
CPU (IC801)
KEY A~D
INTERCOM-CONT
LED
SP-PHONE, EXT1-8
LINE1, LINE2, INTERCOM
IC701
INTERCOM
MOD/DEMOD
C717
T701
LCD
IC806
LCD
INTERFACE
KEY
MATRIX
LED
LED
DRIVER
IC605
IC802
EEPROM
KX-TS3282W: BLOCK DIAGRAM


Intercom TX (HS)
5V
Tel Line TX (HS)
Intercom RX
5V
10V
Tel Line TX (SP)
5.1V
Tel Line RX
Intercom RX
Intercom TX (SP)
7.4V
3.2V
5V
HANDSET
J34
MIC+
MIC-
SP+
SP-
Headset Jack
J305
J302 (X2316)
J301
J300
J303
J304
J306
J307
J308
J309
J310
J311
J312
J313
J314
J315
J316
J317
J318
J319
J320
J321
J322
J323
J324
J325
J326
J327
J328
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J330
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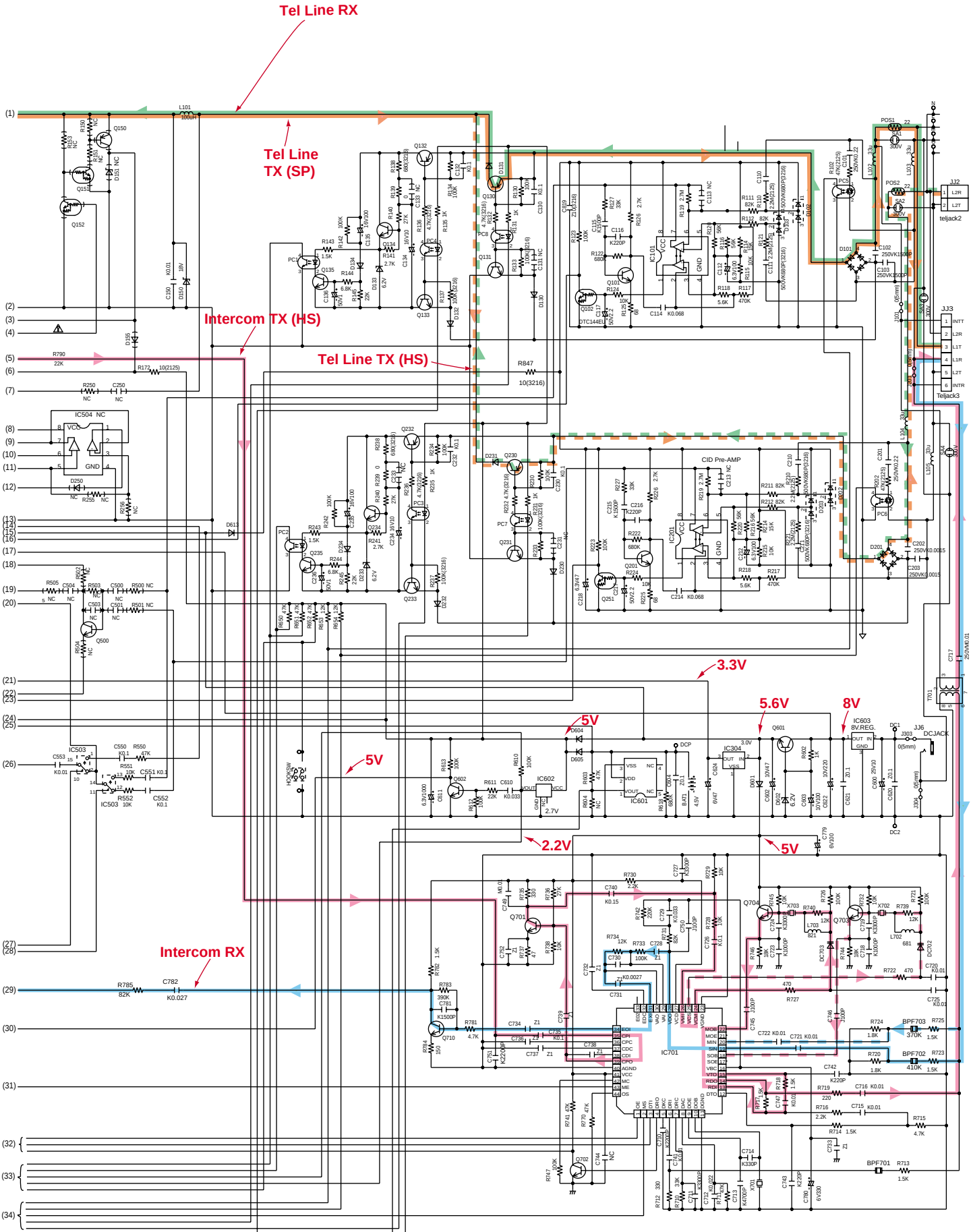
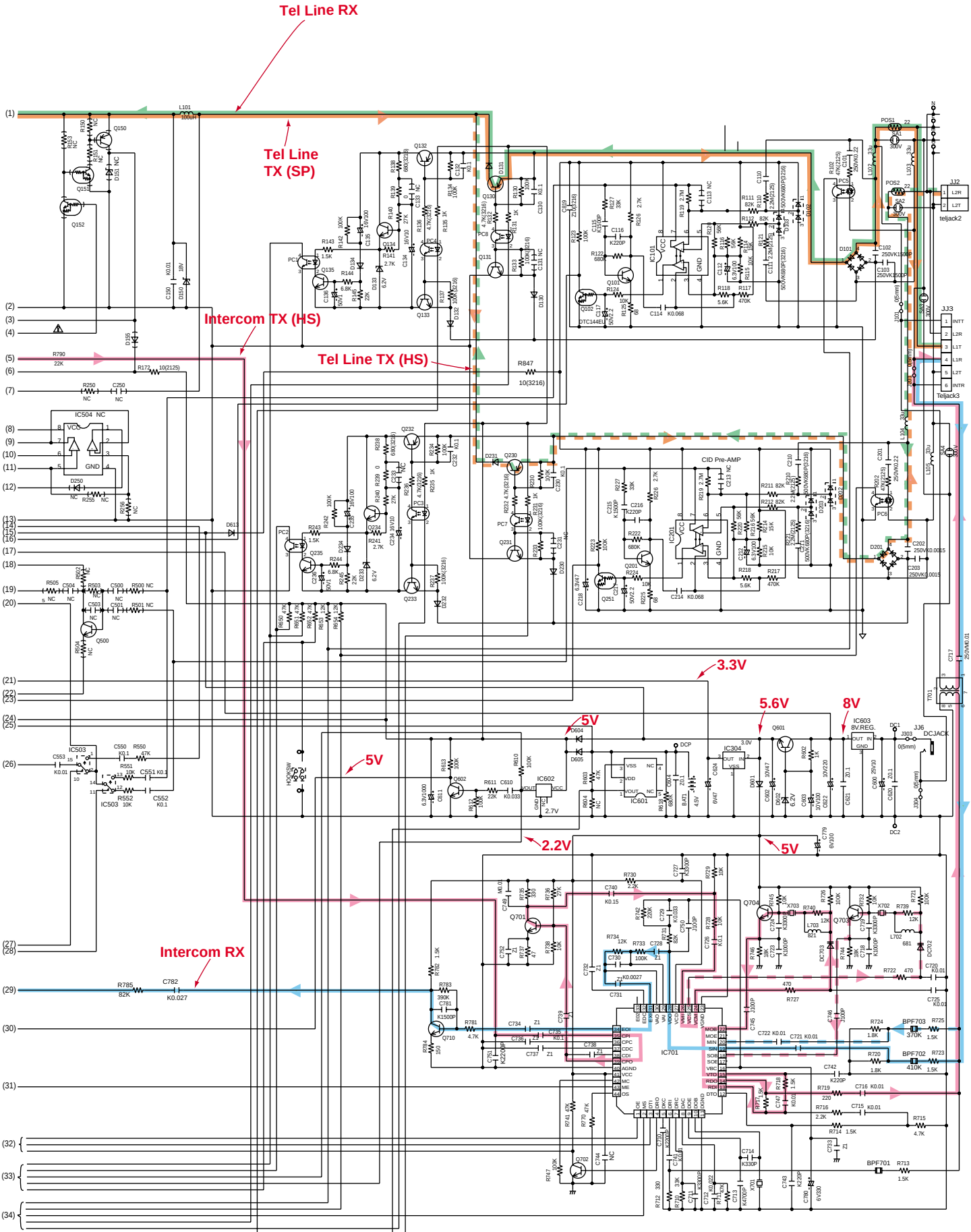
J341
J342
J343
J344
J345


Tel Line RX
Tel Line TX (SP)
Intercom TX (HS)
Tel Line TX (HS)
Intercom RX
3.3V
5.6V
8V
5V
5V
2.2V
5V
CID Pre-AMP
IC504 NC
IC503
IC602
IC601
IC603 8V.REG.
IC304
IC701
DCJACK
Teljack2
Teljack3
KX-TS3282W SCHEMATIC DIARGRAM(Main)


Tel Line RX
Tel Line TX (SP)
Intercom TX (HS)
Tel Line TX (HS)
Intercom RX
3.3V
5.6V
8V
5V
5V
2.2V
5V
CID Pre-AMP
IC504 NC
IC503
IC602
IC601
IC603 8V.REG.
IC304
IC701
DCJACK
Teljack2
Teljack3
KX-TS3282W SCHEMATIC DIARGRAM(Main)